

Principles of International Environmental Law

Philippe Sands and Jacqueline Peel
with Adriana Fabra and Ruth MacKenzie

FOURTH EDITION



CAMBRIDGE

Principles of International Environmental Law

This new and fully updated edition of *Principles of International Environmental Law* offers a comprehensive and critical account of one of the fastest growing areas of international law: the principles and rules relating to environmental protection.

Introducing the reader to the key foundational principles, governance structures and regulatory techniques, *Principles of International Environmental Law* explores each of the major areas of international environmental regulation through substantive chapters, including climate change, atmospheric protection, oceans and freshwater, biodiversity, chemicals and waste regulation. The ever-increasing overlap with other areas of international law is also explored through examination of the interlinkages between international environmental law and other areas of international regulation, such as trade, human rights, humanitarian law and investment law.

Incorporating the latest developments in treaty and case law for key areas of environmental regulation, this text is an essential reference and textbook for advanced undergraduate and postgraduate students, academics and practitioners of international environmental law.

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Foreword

It is with pleasure that I write a foreword to this timely exposition and analysis of the system of environmental law as a whole, and as it stands after the Rio Conference. If it seems a little bold to call environmental law a 'system', it is assuredly not so bold as it would have been before the publication of Philippe Sands' important work. A main purpose of academic writing should be to perceive and portray patterns and relations in a body of legal rules so as to make it manageable, teachable, comprehensible and usable. The present work succeeds in doing this to a remarkable degree.

The author's statement that environmental law has a 'longer history than some might suggest' might be thought to border on understatement. When something is taken up as a modish 'concern', there is often a strong temptation to think of it as a discovery by a newly enlightened generation. It is, therefore, a useful antidote to be reminded that, of the two pioneering decisions, both still leading and much-cited cases, one was the *Bering Sea* arbitration, of a century ago, and the other, the *Trail Smelter* arbitration, of half a century ago. Nevertheless, the present-day need for law to protect the environment and to preserve resources is of a scale and urgency far beyond the imagining of the early pioneers.

Seeing these questions, however, in a proper historical perspective does help to warn against the dangers of treating environmental law as a specialisation, which can be made a separate study; or, on the other hand, of regarding environmental law – and here I borrow Philippe's words – as a 'marginal part of the existing legal order'. A perusal of this book will readily reveal to the reader the fallacy of both of these attitudes. Part I of the book – which is entitled 'The Legal and Institutional Framework' – comprises illuminating treatments of such basic subjects of international law as the legal nature of states, international organisations, non-governmental organisations, treaties and other international acts such as resolutions of the General Assembly and other international bodies, EC regulations and directives, the nature and uses of customary law, the general principles of law, and general problems of compliance, implementation and enforcement, and dispute settlement. These pages amply demonstrate that the environmental lawyer has to be equipped with a good basic knowledge of general international law before he can even get properly started on the study of environmental law. Likewise, the general student of international law will, in these pages, find illumination in plenty on these basic questions of general public international law; and indeed also of EC law. He will also find, in the later pages, valuable light upon such difficult questions as 'sovereignty over natural resources', the *actio popularis*, 'standards' and 'soft law'; techniques to encourage compliance, such as reporting; the

position in war and armed conflict; general principles of liability and reparation, as well as specifically environmental notions such as the so-called 'polluter pays' principle.

It is in Part II of the book that the author broaches the immense task of setting out, and analysing in some detail, the developing substantive law for the protection of the environment and for the conservation of resources, and of biological diversity. Here, again, when it comes to classifying the areas for purposes of exposition, some of the general headings are familiar to every international lawyer: the atmosphere and outer space; oceans and seas; freshwater resources; hazardous substances and activities; waste; the polar regions; and European Community environmental law. It is in itself a valuable lesson to be able thus to see the shape and dimensions of environmental law as a whole. To establish the boundaries of a subject is an important step towards its intellectual comprehension.

It is a trite observation that environmental problems, though they closely affect municipal laws, are essentially international; and that the main structure of control can therefore be no other than that of international law. Yet one result of this study of environmental law as a whole is to show that the environmental factor has already so infiltrated so many of the traditional areas of public international law that it is no longer possible adequately to study many of the main headings of public international law without taking cognisance of the modifying influence in that particular respect of the principles, laws and regulations of environmental law. There are many instances; one that might not be the first possibility that comes to mind is the law concerning foreign investment. Many readers will remember the controversies of the 1960s and 1970s over the efforts to strike some sort of balance between the principle of national sovereignty over a nation's natural resources, and the competing principles limiting the sovereign rights of expropriation without proper compensation for the foreign investment in those resources. At the present time, this is an area of the law which can no longer be appreciated without adding the considerable factor of the need to protect the environment and therefore the need to limit certain kinds of exploitation, whether foreign or domestic, which cause international waste and harm. The problem of the destruction of tropical rainforests is probably the most dramatic and best known example of a national resource itself becoming an international problem.

Another matter that needs to be thought about is how to make the law of the environment more efficient. The existing principles, laws, case law, regulations, standards, resolutions and so on, already constitute a vast and complicated apparatus of paper and of powers conferred upon certain bodies or persons. When it is considered that the existing law is, however, also seemingly quite inadequate to the problem and that much more may be needed, one is bound to ask questions about how much of the world's resources, wealth, energy and intellect is to be spent on this task of regulation and control. Pollution resulting from an excess of the complication and sheer number of laws, regulations and officials is by no means the least of the threats to our living environment. This book is an important first step towards rationalisation, for it does, by its very able and effective exposition, enable one to see the dimensions of the problem and to get some sort of conspectus of the existing legal apparatus.

Another matter of concern is the need to keep laws and regulations in this area reasonably flexible and open when necessary to changes of direction. Good laws on the environment are driven, or should be driven, by the lessons to be learned from the natural sciences and from technology. But scientists are not by any means always in agreement. It is reasonable to assume, moreover, that the enormous sums spent upon further scientific and technological research

imply that the scene of scientific 'fact' is liable to change importantly and even suddenly; for, if not, it is difficult to see what this expensive endeavour is about. For an example of this kind of effect, it is necessary only to mention how new scientific knowledge of the dangers from dioxins have put into a wholly new perspective erstwhile schemes for conserving non-renewable sources of energy using instead the combustion of mixed wastes. We need, therefore, a law of the environment that can change with the changes in the scientific world; otherwise it will quickly and most damagingly be enforcing outmoded science. But to achieve change in international regulations, without thereby merely adding more layers of regulation, is technically by no means an easy task or even always a possible one.

But the matter goes deeper than these preoccupations, important as they are. Humanity is faced with a multifaceted dilemma. There seems to be an urgent need for more and more complex regulation and official intervention; yet this is, in our present system of international law and relations, extremely difficult to bring about in a timely and efficient manner. The fact of the matter surely is that these difficulties reflect the increasingly evident inadequacy of the traditional view of international relations as composed of pluralistic separate sovereignties, existing in a world where pressures of many kinds, not least of scientific and technological skills, almost daily make those separate so-called sovereignties, in practical terms, less independent and more and more interdependent. What is urgently needed is a more general realisation that, in the conditions of the contemporary global situation, the need to create a true international society must be faced. It needs in fact a new vision of international relations and law. This is a matter that takes us beyond the scope of this book. But those who doubt the need for radical changes in our views of, and uses of, international law should read Philippe Sands' book and then tell us how else some of these problems can be solved. After all, this is not just a question of ameliorating the problems of our civilisation but of our survival.

Sir Robert Jennings QC

Former Judge and President of the International Court of Justice;
sometime Whewell Professor of International Law in the University of
Cambridge; Honorary Bencher of Lincoln's Inn; former President of the
Institut de Droit International

Preface and Acknowledgements to the Fourth Edition

In its fourth edition, *Principles of International Environmental Law* affirms the consolidation of international environmental law as a central part of the international legal order. Major treaty regimes cover virtually all environmental issues, with new treaties now in place for mercury pollution (2013 Minamata Mercury Convention) and climate change (2015 Paris Agreement). Case law on environmental and natural resource issues continues to grow, and there is considerable evidence that practitioners and judges are engaging more fully with questions regarding science and expert evidence in factually complex and technical disputes. In the period since the third edition, linkages between international environmental law and other areas of international law have deepened and broadened. This is also reflected in policy instruments, such as the 2015 United Nations Sustainable Development Goals, which bring together issues of development, poverty eradication and disaster management with environmental protection in an international sustainable development agenda for the period up to 2030. However, as we noted in the third edition preface, extensive legal development in the field has not satisfactorily addressed the most pressing environmental problems. With the exception of the ozone treaty regime – hailed as a success for its role in reversing ozone depletion – international environmental law has not provided a solution in the key areas of climate change, marine pollution and biodiversity loss. More than ever, the subject of international environmental law is approaching a critical point: can it deliver real protections, or will its impact be merely marginal or cosmetic?

Like the previous editions, this edition is intended to provide a comprehensive overview of those rules of public international law that have as their object the protection of the environment. We have sought to state the law as of March 2017. Necessarily, given the vast breadth of the subject and the level of detail now available on some specific topics (climate change, oceans, trade, biodiversity are leading examples here), the book's account of the subject area cannot be exhaustive. In this edition, we have sought to improve the book's coverage of important areas such as climate change (with a new chapter which incorporates the latest developments under the Paris Agreement), oceans and fisheries, and biodiversity. In respect of the latter two topics, the book has again benefited from the serious contributions made by the expert and experienced authors of these revised chapters, Ruth MacKenzie (Chapter 10) and Adriana Fabra (Chapter 11), to whom we extend our deep appreciation. We have also strengthened the critical dimension of our analysis of developments in international environmental law, including the case law, which is integrated with the central themes and challenges for the field identified in Chapters 1 (introduction) and 19 (future developments). Finally, we have streamlined content to make

clearer the connections between different topics (e.g. hazardous substances and wastes in Chapter 12, environmental information and technology transfer in Chapter 15, and trade, investment and intellectual property rights treated collectively in Chapter 18 on international economic law and the environment), and introduced ‘chapter outline’ and ‘further reading’ sections in each chapter to provide guidance to readers on the chapter content, as well as areas for further research.

Like the third edition, this edition is co-authored, by Philippe Sands at University College London and Jacqueline Peel of Melbourne University, Australia. There are many people from London, Melbourne and elsewhere who deserve particular thanks for their assistance with the work for this edition.

In London, we express our thanks to Raj Bavishi, Remi Reichhold, Josh Roberts and Christine Wortmann for their superb and timely research assistance, and to Liz Milner and Louise Rands for admirable administrative support. Thanks also to Dean Hazel Genn and the Faculty of Law at University College London for the continued support, including financial support, to cover the costs of research assistance.

At Melbourne, the book – and particularly the new climate change chapter – benefited enormously from the research assistance offered by Katherine Lake. Also deserving of many thanks are students in the Melbourne Law School’s Library Research Service supervised by Robin Gardiner. Our gratitude and recognition go to Chris Kaias who worked on finding all the latest environmental cases and Stephen Polesel who tracked down numerous treaty developments.

For Chapter 11, on oceans, seas and marine living resources, we wish to acknowledge and offer thanks for the research assistance of Daria Shvets, PhD Researcher at the Faculty of Law, University Pompeu Fabra, in Barcelona.

At Cambridge University Press we would like to thank Finola O’Sullivan, Marta Walkowiak and Caitlin Lisle. As ever, such errors or omissions as might have crept in remain our full responsibility.

We express our deep appreciation to Tom Hammick for permission to reproduce on the cover a copy of his artwork, ‘Two Beds’.

Finally, our greatest thanks are to our families: in Australia, Michael Findlay, Aly and Will; and, in London, Natalia, Katya, Lara and Leo.

Philippe Sands
University College London

Jacqueline Peel
Melbourne Law School

31 March 2017

Preface and Acknowledgements to the Third Edition

This third edition of *Principles of International Environmental Law* provides further confirmation that international environmental law is ‘well established’ and ‘a central part of the international legal order’, as the second edition already recognised. In the intervening decade, our appreciation of the complexity of environmental problems, and their deep interlinkages with other issue areas, particularly in the economic field, has grown. In response, international environmental law has also developed increasing complexity, although largely through the consolidation and expansion of existing regimes rather than through the creation of new instruments. Case law on environmental and natural resource issues continues to be a burgeoning area of international litigation, confronting practitioners and judges with difficult new questions such as how to approach science and expert evidence in factually complex and technical disputes. Despite the myriad of legal developments, the most complex environmental problems facing international law remain some of the most pressing, particularly, climate change, marine pollution and biodiversity loss. In a certain sense, the subject of international environmental law is about to meet the point at which the rubber hits the road: can it deliver real protections, or will its impact be only marginal and cosmetic?

Like the previous editions, this edition is intended to provide a comprehensive overview of those rules of public international law that have as their object the protection of the environment. We have sought to state the law as of July 2011. Necessarily, given the vast breadth of the subject and the level of detail now available on some specific topics (climate change, fisheries, trade, biodiversity are leading examples here), the book’s account of the subject area cannot be exhaustive. We have, however, sought to improve the book’s coverage of key areas such as atmospheric protection and climate change, oceans and fisheries and biodiversity. In respect of the latter two topics, the book has benefited enormously from the serious contributions made by the expert and experienced authors of these revised chapters, Adriana Fabra (Chapter 9) and Ruth MacKenzie (Chapter 10), to whom we extend our deep appreciation. We have also introduced a more critical dimension to our analysis of developments in international environmental law, including the case law, and sought to tie this analysis to central themes or challenges for the field, detailed in Chapter 1. Finally, the book includes a new concluding chapter (Chapter 21) that considers the future directions for and challenges facing international environmental law, matters on which we remain sanguine.

This edition is co-authored, in contrast to previous editions, with the introduction of Jacqueline Peel of Melbourne University, Australia, who builds on her previous role and now comes on board as a second author.

There are many people from both London and Melbourne who deserve particular thanks for their assistance with the work for this edition.

In London, we express our thanks to Raj Bavishi, Remi Reichhold, Josh Roberts and Christine Wortmann for their superb and timely research assistance, and to Liz Milner and Louise Rands for admirable administrative support. Thanks also to Dean Hazel Genn and the Faculty of Law at University College London for the continued support, including financial support to cover the costs of research assistance.

At Melbourne, the book benefited enormously from the tireless research assistance offered by Emma Cocks. Also deserving of many thanks is the team of students in the Melbourne Law School's Library Research Service supervised by Robin Gardiner. Their extensive efforts to provide updates on legal developments and to track down all the latest relevant treaties warrant our gratitude and recognition: they are Christopher Lum, Cosima McRae, Nahal Zebarjadi, Harvey Liu, Jenny Huynh and Claire Kelly. The Melbourne Law School also provided important support for the project in other ways, most particularly through the provision of seed funding to allow the employment of research assistance.

At Cambridge University Press we would like to thank Finola O'Sullivan and Sinéad Moloney. As ever, such errors or omissions as might have crept in remain our full responsibility.

We express our deep appreciation to Miquel Barceló for permission to reproduce a copy of his etching *Elefandret*, and also to Victoria Comune for her support.

Finally, our greatest thanks are to our families: in Australia, Michael Findlay, Aly and Will; and, in London, Natalia, Katya, Lara and Leo.

Philippe Sands
University College London

Jacqueline Peel
Melbourne Law School

30 November 2011

Preface and Acknowledgements to the Second Edition

The second edition of *Principles of International Environmental Law* indicates that the legal aspects of international environmental issues are of growing intellectual and political interest, and that they have moved beyond the situation I described nearly ten years ago as reflecting 'an early phase of development'. It is apparent from the new material which this edition treats – new conventions, new secondary instruments, new (or newly recognised) norms of customary law, and a raft of new judicial decisions – that international environmental law is now well established and is a central part of the international legal order. It is also clear that international environmental law has reached new levels of complexity, in particular as it has become increasingly integrated into other social objectives and subject areas, particularly in the economic field. The burgeoning case law, and the increased involvement of practitioners, suggests that it can no longer be said that international environmental law is, as a branch of general public international law, at an early stage of practical development.

Like the first edition, this edition (together with the accompanying volume of international documents for students) is intended to provide a comprehensive overview of those rules of public international law which have as their object the protection of the environment. Those rules have become more numerous and complex, but also more accessible: the advent of the Internet often means that material which was previously difficult to track down – for example, information as to the status, signature and ratification of treaties, and acts and decisions of Conferences of the Parties and subsidiary bodies – is now relatively easy to obtain. But the Internet also increases the danger of becoming overwhelmed by the sheer quantity of material that is now available, a risk which is exacerbated by the very extensive (and growing) secondary literature which is produced every year, only a small proportion of which may really be said to indicate real insights into new developments. This background necessarily means that what is gained on breadth may be lost – at least in some areas – on depth. This comprehensive account cannot address all of the details that now dominate specific areas – trade, fisheries and climate change spring immediately to mind – and the reader will need to refer to more detailed accounts of particular sectors, and the websites of various conventions, to obtain many of the details. Over the past decade, the body of law has again increased dramatically; I have sought to state the law as it was on 1 January 2003.

This second edition has largely been inspired by my endeavours as an academic and practitioner over the last eight years, in particular contact with my academic colleagues at London and New York Universities and professional contact in connection with the various international cases I have been fortunate to be involved in. Again, it is impossible to acknowledge here all the

sources of input and generous support received since 1995. It is appropriate, however, to acknowledge those colleagues and friends who have exercised particular influence, directly or indirectly. At London University, Matt Craven and Michael Anderson have provided great support, as have many other colleagues at SOAS, together with Richard McCrory, Jane Holder and Jeffrey Jowell at my new home at University College London, with help too from Ray Purdue and Helen Ghosh. At New York University, I could not have wished for greater collegiality and friendship than that offered by Dick Stewart, together with the support offered over many years by Tom Franck, Andy Lowenfeld, Eleanor Fox, Iqbal Ishar, Norman Dorsen, Ben Kingsbury, Radu Popa, Vicki Been and Ricky Revesz, as well as Jane Stewart, and for heaps of administrative support from Jennifer Larmour. At the Project on International Courts and Tribunals, Shep Forman, Ruth MacKenzie, Cesare Romano, Thordis Ingadottir and Noemi Byrd have also provided unstinting support. My former colleagues at FIELD have continued to provide support and assistance, including Jake Werksman, Farhana Yamin, Jurgen Lefevre, Alice Palmer and Beatrice Chaytor.

Many of my students and former students at London and New York Universities have provided long hours of patient assistance. Two colleagues have provided particular support, to whom I extend special thanks and appreciation: Jacqueline Peel, now at the Melbourne University Faculty of Law, who has expended great efforts in assisting with research and in drafting of the highest quality and who, I hope, might become the co-author of this book in its third edition; and Paolo Galizzi, now at Imperial College London, who is co-authoring the student edition of basic documents to accompany this volume. Thanks also go to Valeria Angelini, Lauren Godshall, Ed Grutzmacher, Victoria Hallum, Miles Imwalle, Jimmy Kirby, Lawrence Lee, Bruce Monnington, Lillian Pinzon, Katarina Kompari, Denise Ryan, Anna-Lena Sjolund, Eva Stevens-Boenders and Mimi Yang. Thanks also go to Tim Walsh for electronic wizardry, and – once again – to Louise Rands in deepest Devon for helping to bring the manuscript in on time.

In other places – courts and tribunals and conferences – I have benefited inestimably from the learning and experience offered to me by James Crawford and Pierre-Marie Dupuy, and from Boldizsar Nagy, Vaughan Lowe, Chris Thomas, Laurence Boisson de Chazournes and Adriana Fabra. My colleagues at Matrix Chambers have created an environment which encourages ideas to be generated and tested, supportive of both the environmental law and the international law elements which make up this book and the experience it reflects.

Finally, I would like to thank Finola O'Sullivan and Jennie Rubio at Cambridge University Press. Needless to say, such errors or omissions as might have crept in remain my full responsibility.

For her efforts on a day-to-day basis – and every day – my greatest thanks are to Natalia Schiffrin, for all her help, and for continuing to remind me of what is important in life and what isn't. And of course this time she has had a little help from Leo, Lara and Katya, each of whom has contributed uniquely over the last eight years.

Philippe Sands
1 June 2003
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Preface and Acknowledgements to the First Edition

Principles of International Environmental Law marks the culmination of that aspect of my professional activities which was triggered by the accident at the Chernobyl nuclear power plant, on 26 April 1986. At that time I was a research fellow at the Research Centre for International Law at Cambridge University, working on international legal aspects of contracts between states and non-state actors, and not involved in environmental issues. With the active support of the Research Centre's Director, Eli Lauterpacht, I began to examine the international legal implications of the Chernobyl accident, which indicated that the legal aspects of international environmental issues were of intellectual and political interest, and still in an early phase of development. This led to several research papers, a book and various matters involving the provision of legal advice on international environmental issues. My interest having been aroused, the implications of environmental issues for public international law provided a rich seam which has sustained me for several years, and resulted in my founding, with James Cameron, what is now the Foundation for International Environmental Law and Development (FIELD). That, in turn, has provided me with the fortunate opportunity to participate in a number of international negotiations, most notably those preparatory to UNCED and the Climate Change Convention, and to develop an international legal practice which is varied, unpredictable, entertaining, often challenging and occasionally frustrating.

This book, together with the accompanying volumes of international documents (Volumes IIA and IIB) and EC documents (Volume III), is intended to provide a comprehensive overview of those rules of public international law which have as their object the protection of the environment. I hope that it will be of some use to lawyer and non-lawyer alike, whether working for government, international organisations, non-governmental organisations and the private sector, or having an academic or other perspective. Its structure and approach reflect my belief that international environmental efforts will remain marginal unless they are addressed in an integrated manner with those international economic endeavours which retain a primary role in international lawmaking and institutional arrangements, and unless the range of actors participating in the development and application of international environmental law continues to expand. In that regard, it is quite clear that international environmental law remains, as a branch of general public international law, at an early stage of practical development, in spite of the large body of instruments and a burgeoning literature. Over the past decade the body of law has increased dramatically, and only the best-equipped researchers will be able to keep up with all developments as they occur. I have sought to state the law as it was on 1 January 1993, although

the diligent reader will note that on some aspects more recent developments have also been treated.

Principles of International Environmental Law therefore marks the culmination of an initial phase of my endeavours as an academic and practitioner. Its roots run deep and wide, and it is impossible to acknowledge here all the sources of input and generous support which I have received over the past several years. It seems to me to be quite appropriate, however, to acknowledge those teachers, colleagues and friends who have exercised particular influence, directly or indirectly.

The fact that I became interested in international law at all is largely due to my first teacher of international law, Robbie Jennings, then in his final year at Cambridge before moving to The Hague: I am hugely grateful for his inspiring encouragement and support ever since, particularly for taking the view that the environment was, even several years ago, properly a subject for consideration in its international legal aspect. Eli Lauterpacht gave me my first professional 'break' and taught me, in particular, the value of a practical approach and the importance of rigour. Even at a distance, Philip Allott constantly reminds me of the need to think about the bigger picture. And lest I should slip, David Kennedy has been a critical inspiration in reminding me that there is another way.

Colleagues at London University (particularly Ian Kennedy at King's College and Peter Slinn at the School of Oriental and African Studies) have provided great support in allowing me the flexibility to combine teaching with practical efforts. I would also like to record my debt to Tom Franck for introducing me to New York University Law School, and to Dean John Sexton for giving me a more regular perch from which to base my forays to the United Nations.

I am tremendously indebted to all my colleagues at FIELD. I would like to thank the Board of Trustees, and especially John Jopling, the Chairman, for allowing me to devote considerable time to this project, as well as Marian Bloom, Frances Connelly, Rona Udall and Roger Wilson for their administrative support. Many FIELD interns provided long hours of patient assistance, and I want especially to thank Carolyn d'Agincourt, Mary Beth Basile and Kiran Kamboj for going way beyond the call of duty during their extended internships, and Joanna Jenkyn-Jones, Hugo Jolliffe and Penny Simpson for helping me to get over the final hurdles more easily. But it is to FIELD's lawyers that I extend especially warm thanks for helping me to fulfil my other obligations and for always being available to provide information and critical insights on those areas in which they are expert. James Cameron is an inspirational friend, colleague and co-founder of FIELD, and I feel fortunate to have found a working partner who is able to provide me with the space and support to get on with my own efforts while reminding me that I also have, in all senses, broader responsibilities. Greg Rose (now at the Australian Department of Foreign Affairs and Trade), Jake Werksman and Farhana Yamin have been outstanding colleagues and friends. Richard Tarasofsky and Mary Weiss, my collaborators on Volumes II and III, assisted also in the preparation of this volume. FIELD's many supporters have also contributed, indirectly but significantly, to the production of this book, and I would like to thank, in particular, Janet Maughan (Ford Foundation), Mike Northrop (Rockefeller Brothers Fund), Ruth Hennig (John Merck Fund) and Marianne Lais Ginsburg (German Marshall Fund) for supporting FIELD's efforts and enabling me to participate in some of the important international legal developments since 1989. At my chambers, I want to thank Ailsa Wall for her magnificent typing efforts, and Paul Cooklin for his accommodation of my rather paripatetic needs.

For their efforts on a day-to-day basis my deepest gratitude, however, is reserved for two individuals without whose support it is unimaginable that this book could have been completed. Louise Rands has run my office for the past two and a half years with the greatest efficiency, effectiveness and humour anyone could hope to benefit from, maintaining order (and priorities) in the maelstrom of activities and obligations that frequently engulf FIELD's offices. Natalia Schiffrin has been absolutely fabulous in putting up with the demands that the book placed on our daily routine, and reminding me of what is important in life and what isn't.

I must also acknowledge the assistance of numerous other individuals, who enabled me to obtain access to information or to participate in various meetings, in particular: Andronico Adede (Office of Legal Affairs, United Nations); Raymondo Arnaudo and Genevieve Ball (United States Department of State); Dr John Ashe (Permanent Mission of Antigua and Barbuda to the United Nations); Cath Baker, A. M. Forryan and Susan Halls (UK Foreign and Commonwealth Office); Germaine Barikako (OAU); William Berenson (OAS); Giselle Bird (Department of Foreign Affairs and Trade, Australia); Celine Blais (External Affairs and International Trade, Canada); Dan Bodansky (University of Washington School of Law); Laurence Boisson de Chazournes (Institut des Hautes Etudes, Geneva); M. Borel (Departement Federal des Affaires Etrangeres, Switzerland); Jo Butler and Michael Zammit-Cutajar (Climate Change Convention Interim Secretariat); G. de Proost (Ministere des Affaires Etrangeres, Belgium); Juan-Manuel Dias-Pache Pumareda (Ministerio de Asuntes Exteriores, Spain); Dr Emonds (Bundesministerium fur Umwelt, Naturschutz und Reaktorsicherheit, Germany); Philip Evans (Council of the European Communities); Denis Fada (FAO); Dr Antonio Fernandez (International Commission for the Conservation of Atlantic Tunas); Dr Charles Flemming (Permanent Representative of St Lucia to the United Nations); Nigel Fyfe and Paul Keating (New Zealand Ministry of External Affairs and Trade); Dr R. Gambell (International Whaling Commission); John Gavitt (CITES Secretariat); Professor Gunther Handl (Editor, *Yearbook of International Environmental Law*); Beatrice Larre (OECD); Howard Mann (Environment Canada); Norma Munguia (Mexican Embassy, Washington); Lincoln Myers (formerly Minister of Environment, Trinidad and Tobago); Boldiszar Nagy (Associate Professor, Eotvos Lorand University); Bernard Noble (Deputy Registrar, International Court of Justice); Manoel Pereyra (ICAO); Amelia Porges (GATT); Marie-Louise Quere-Messing (United Nations); N. Raja Chandran (Ministry of Foreign Affairs, Malaysia); Patrick Reyners (OECD-NEA); Keith Richmond (FAO); Stan Sadowski (Paris/Oslo Commissions); Candice Stevens (OECD); Wouter Sturms (IAEA); Patrick Szell (UK Department of Environment); Dr Alexandre Timoshenko (UNEP); Eduardo Valencia Ospina (Registrar, International Court of Justice); Robert van Lierop (formerly Permanent Representative of Vanuatu to the United Nations); Makareta Waqavonova (South Pacific Forum); and Linda Young (IMO).

Finally, I would like to thank Vaughan Lowe for encouraging me to write this textbook (and the supporting volumes of documents), for providing clear intellectual guidance and support, and for introducing me to Manchester University Press. At the Press, Richard Purslow has been as patient and supportive an editor as one could possibly hope to find, and his colleagues Jane Hammond Foster, Elaine White and Celia Ashcroft have provided enormous assistance. Needless to say, such errors or omissions as might have crept in remain my full responsibility.

Philippe Sands
London
1 November 1994

1

The Environment and International Society: Issues, Concepts and Definitions

CHAPTER OUTLINE

This chapter discusses the key introductory questions of:

1. how 'the environment' is conceived in a global context;
2. the basis for decisions about international environmental legal issues;
3. how the international legal order is structured and functions;
4. international legal definitions of 'the environment'; and
5. the principal challenges facing international environmental law.

The final section of the chapter outlines resources for learning more about, and conducting research, in this field.

Given that the land – and the sea – and the air-spaces of planet Earth are shared, and are not naturally distributed among the states of the world, and given that world transforming activities, especially economic activities, can have effects directly or cumulatively, on large parts of the world environment, how can international law reconcile the inherent and fundamental interdependence of the world environment? How could legal control of activities adversely affecting the world environment be instituted, given that such activities may be fundamental to the economies of particular states?¹

INTRODUCTION: THE ENVIRONMENTAL CHALLENGE

It is widely recognised that the planet faces serious environmental challenges that can only be addressed through international cooperation. Climate change and ozone depletion, loss of biodiversity, toxic and hazardous pollution of air and sea, pollution of rivers and depletion of freshwater resources are among the issues that international law is called upon to address. Since the mid 1980s, the subject of international environmental law has emerged as a discrete field of public international law, although one that is closely related to many other areas. The conditions that have contributed to the emergence of international environmental law are easily identified:

¹ P. Allott, *Eunomia: A New Order for a New World* (Oxford: Oxford University Press, 1990), para. 17.52.

environmental threats are accompanied by a recognition that ecological interdependence does not respect national boundaries and that issues once considered to be matters of national concern have international implications – at the bilateral, subregional, regional or global levels – that can often only be addressed by international cooperation, including by law and regulation.

The growing number of international environmental issues is evidenced by the large body of principles and rules of international environmental law that apply bilaterally, regionally and globally, and reflects international interdependence in a ‘globalised’ world.² Progress in developing international legal control of activities has been gradual and piecemeal, and too reactive to particular incidents or the availability of new scientific evidence (such as the Chernobyl accident or the discovery of the ‘hole’ in the ozone layer). It was not until the late nineteenth century that communities and states began to recognise the transboundary consequences of activities affecting shared rivers or leading to the destruction of wildlife, such as fur seals, in areas beyond national jurisdiction. In the 1930s, the transboundary consequences of air pollution were acknowledged in the litigation leading to the award of the arbitral tribunal in the *Trail Smelter* case. In the 1950s, the international community legislated on international oil pollution of the oceans. By the 1970s, the regional consequences of pollution and the destruction of flora and fauna were obvious, and by the late 1980s global environmental threats had become a part of the international community’s agenda as scientific evidence identified the potential consequences of ozone depletion, climate change and loss of biodiversity. Local issues were seen to have transboundary, then regional, and ultimately global, consequences. In 1996, the International Court of Justice (ICJ) recognised, for the first time, that there existed rules of general international environmental law. The Court declared that a ‘general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment’.³ Since then, specific treaty rules have become more complex and technical, and environmental issues have been increasingly integrated into other subject areas (including trade, investment, intellectual property, human rights and the law governing armed conflict). In addition, international environmental litigation has developed and the case law of international courts and tribunals has expanded, increasingly effecting real changes, as occurred recently in the judgment of the ICJ in the *Whaling Case* brought by Australia against Japan.

The first major global environmental conference – the 1992 UN Conference on Environment and Development (UNCED) – provided an opportunity for the international community to prioritise environmental issues and consolidate a vast and unwieldy patchwork of international legal commitments. The treaties and other international acts adopted before, at and since UNCED reflect the range of economic activities that concern the international community and are subject to international legal regulation for environmental purposes. UNCED agreed environmental priorities that were essentially divided into two categories: those relating to the protection of various environmental media, and those relating to the regulation of particular activities or products. The first category identified the following priorities for the protection and conservation of particular environmental media:

² P. Sands, ‘Turtles and Torturers: The Transformation of International Law’, 33 *New York University Journal of International Law and Politics* 527–58 (2001).

³ (1996) ICJ Reports 226 at 242.

- protection of the atmosphere, in particular by combating climate change, ozone depletion and ground-level and transboundary air pollution;
- protection of land resources;
- halting deforestation;
- conservation of biological diversity;
- protection of freshwater resources; and
- protection of oceans and seas (including coastal areas) and marine living resources.

The second category of major issues identified the products and by-products of human technological and industrial innovation which are considered to be particularly harmful to the environment, and which therefore require international regulation. These include:

- biotechnology;
- toxic chemicals, including their international trade;
- agricultural practices;
- hazardous wastes, including their international trade;
- wastes and sewage-related issues; and
- radioactive wastes.

For both categories, which continue to have currency today, the international legal issues are complex, and cannot be considered or addressed properly without taking account of political, cultural, economic and scientific concerns. What level of environmental protection should standards seek to establish? Should the standards be set on a uniform basis or should they be differentiated to take account of political, economic and ecological circumstances? What regulatory and other techniques exist to apply those standards? How are the standards to be enforced domestically and internationally? What happens if a dispute arises over non-compliance?

In addressing these questions, it is clear that the environment represents a complex system of interconnections. In order to understand the evolution and character of a particular environment it is necessary to consider a broad range of apparently unrelated factors, which interact with each other in a number of ways that do not permit them to be treated as discrete.⁴ The interdependence of environmental issues poses legal challenges: how to develop and apply a comprehensive and effective set of legal requirements aimed at preventing environmental damage by addressing the sources without taking measures that will cause harm elsewhere? Current efforts to develop environmentally sound energy policies, for example, reflect the full extent of this challenge and demonstrate how developments in the law depend upon political will, economic factors and technological capacity.

This book maps the field of international environmental law and its relationship with other related international fields such as trade and investment, international humanitarian law and human rights. The foundations of the book are 'principles' of international environmental law, many of which were articulated in the 1992 Rio Declaration on Environment and Development issued by states at UNCED.⁵ These principles have provided the architecture for the development of detailed legal arrangements dealing with different environmental issues. The various sectoral regimes that make up the broader field of international environmental law are discussed in

⁴ A. Goudie, *The Nature of the Environment* (Chichester: Wiley, 2001, 4th edn), 503–4.

⁵ See further, Chapter 6, pp. 200–1.

Part II of the book. The principles of international environmental law also underpin a range of techniques and regulatory tools of international environmental law – information sharing, technology transfer, liability mechanisms and environmental impact assessment – described in Part III of the book. Finally, the principles of international environmental law urge its integration and shape its interlinkages with other areas of international law and governance, an evolution addressed in Part IV of the book.

In this Part, we address those features of the international legal and institutional context that are essential to understand how international environmental rules are made, implemented and enforced, and the actors involved in those processes. The remainder of the chapter introduces key concepts, including: the factors that shape international environmental law and decision-making processes; the basic functions and structure of the international legal order; notions of the ‘environment’ that underpin legal arrangements; and the most important challenges that face international legal efforts to address environmental issues.

THE BASIS FOR DECISION-MAKING: SCIENCE, ECONOMICS AND OTHER VALUES

Like other areas of law, international environmental law is influenced by many non-legal factors. The likelihood of achieving progress on the law is influenced by: the extent of scientific consensus about a problem; the level of public concern; political perceptions as to the allocation of responsibilities; the economic consequences of action or inaction; and the existence of existing multilateral precedents.⁶ Factors that lessen the likelihood of reaching agreement include the economic costs of environmental controls and the number of states negotiating a treaty. Other considerations include the choice of forum for the negotiation of the agreement and the nature of arrangements for dealing with non-compliance. Of all these factors, two are particularly influential: the impact of science, and perceived economic impacts.

Science

The strong concern of states to ensure that their economic interests are taken into account in the development and application of international environmental law has been matched by an equally firm view that environmental regulations should only be adopted where there is compelling scientific evidence that action is required to prevent environmental damage. This brings diplomats and international lawyers together with the scientific community. The ease with which an international lawyer is able to present a cogent case for international legislation often turns on the ability to show that the lack of action by the international community is likely to result in significant adverse effects. Within the past two decades this task has been made substantially less onerous by growing acceptance of a precautionary approach, requiring action in the face of significant scientific uncertainty. The 1985 Vienna Convention (and its 1987 Montreal Protocol), the 1992 Climate Change Convention (and its 1997 Kyoto Protocol), the 1995 Fish Stocks Agreement and the 2000 Cartagena Protocol on Biosafety are examples of treaties establishing obligations in the face of scientific uncertainty and in the absence of an

⁶ R. Hahn and K. Richards, ‘The Internationalisation of Environmental Regulation’, 30 *Harvard International Law Journal* 421 at 433–40 (1989).

international consensus on the existence of environmental harm.⁷ To these may be added a series of international judicial decisions informed by 'prudence and caution'.⁸ The persistence of sceptical views about the science of climate change, however, indicates the brake that uncertainty (or at least the perception of scientific discord) may have on legal developments.⁹

Since the first edition of this book, the place of science in international environmental decision-making has been the subject of vigorous debate, largely focusing around competing claims concerning the lawfulness of restrictions on the use of, and international trade in, modified crops and foodstuffs, including genetically modified organisms.¹⁰ Disputes under various World Trade Organization (WTO) agreements (relating to beef hormones¹¹ and GMOs)¹² and efforts to negotiate new rules on climate change¹³ have provided opportunities for an airing of states' views as to the degree of scientific evidence and certainty that is required to justify restrictions.¹⁴ As to science, in large part the issues have been driven by differences of perspective between the United States and the European Union, with the former strongly in favour of decision-making based on 'hard science'. As the US State Department puts it:

[T]he increasing efforts from within the EU . . . could weaken the scientific basis for regulatory decisions that affect trade. This trend poses a challenge not only to US interests but also to the rules-based, global trading system that we have spent the past 50 years building.¹⁵

The contrary position – often adopted by the European Union – would allow decision-makers a greater 'margin of appreciation' in the face of scientific uncertainty.¹⁶ The tension continues, notwithstanding efforts at regulatory convergence through new trade partnerships.¹⁷ For international adjudicators these differences pose some acute difficulties. The approaches of the ICJ (in the *Pulp Mills* case, *Costa Rica v. Nicaragua* case and the *Whaling* decision), the International Tribunal for the Law of the Sea (in Advisory Opinions on *Responsibilities and Obligations in the Area* and *Sub-regional Fisheries Commission*) and the WTO Dispute Settlement Body (in the *GMO* case) merit attention and comparison, indicating a range of views on the need for

⁷ See Chapter 6, pp. 229–40, on the precautionary principle.

⁸ ITLOS decisions in *Southern Bluefin Tuna*, *Land Reclamation* and *MOX Provisional Measures* cases. See Chapter 6, pp. 236–7.

⁹ Kevin Trenberth, 'More Knowledge, Less Certainty', 4 *Nature Reports Climate Change* 20 (2010), available at www.nature.com/climate/2010/1002/pdf/climate.2010.06.pdf; D. Henderson, 'The Climate Change Debate Today: COP15, the CRU Affair, and the Basis for Policy', 21(3) *Energy and Environment* 279 (2010); S. B. Capstick and N. F. Pidgeon, 'What Is Climate Change Scepticism? Examination of the Concept Using a Mixed Methods Study of the UK Public' 24 *Global Environmental Change* 389 (2014).

¹⁰ J. Peel, *Science and Risk Regulation in International Law* (Cambridge: Cambridge University Press, 2010).

¹¹ See Chapter 18, pp. 873–9. ¹² See *ibid.*, pp. 879–81. ¹³ See Chapter 8, pp. 318ff.

¹⁴ For an excellent overview, see T. Christoforou, 'Science, Law and Precaution in Dispute Resolution on Health and Environmental Protection: What Role for Scientific Experts?', in J. Bourrinet and S. Maljean-Dubois (eds.), *Le Commerce international des organismes génétiquement modifiés* (Paris: La documentation française, 2002).

¹⁵ Quoted in M. Geistfeld, 'Reconciling Cost-Benefit Analysis with the Principle That Safety Matters More than Money', 76 *New York University Law Review* 114 at 176 (2001). The same article quotes an editorial in the *Wall Street Journal* (on 10 February 2000): 'The precautionary "principle" is an environmentalist neologism, invoked to trump scientific evidence and move directly to banning things they don't like – biotech, wireless technology, hydrocarbon emissions.'

¹⁶ Chapter 6, pp. 234–8.

¹⁷ L. Bergkamp and L. Kogan, 'Trade, the Precautionary Principle, and Post-Modern Regulatory Process' 4 *European Journal of Risk Regulation* 493 (2013).

precautionary measures.¹⁸ In parallel with such judicial developments has been the recognition of a greater role for early 'risk assessment', beyond traditional use of environmental impact assessment.¹⁹

Economics

The progress of international environmental law reflects a close relationship between environmental protection and economic development. Over the short term, laws adopted to protect the environment can impose potentially significant economic costs. Moreover, certain technologically developed countries may be better placed to benefit from the adoption of stringent environmental standards, while others will be concerned about the threat to their economic competitiveness resulting from the failure of other countries to adopt similarly stringent standards and may want to relax (or at least not strengthen) their environmental standards.²⁰

In the early generation of environmental treaties, it was rare to provide for financial resources to be made available to compensate for the additional costs of protective measures. The Convention on the International Trade in Endangered Species (CITES), for example, did not provide compensation to African states for the loss of revenue resulting from the 1989 ban on international trade in ivory. This may have limited the desire of many developing countries to support similar measures subsequently. There is also concern that moves towards harmonisation will lead to a lowering of environmental standards to ensure that economic costs can be borne, as reflected in efforts to introduce a principle of 'cost-effectiveness' to guide decision-making under some environmental agreements.²¹ Accordingly, some treaties, such as the EU Treaty (as amended since 1992), require certain EU secondary legislation to include a safeguard clause that allows member states to adopt provisional measures for 'non-economic environmental reasons'.

It is hardly surprising, therefore, that environmental concerns are now closely connected with economic considerations. Aside from the question of the potential use of economic instruments to achieve environmental objectives,²² two issues are particularly acute. Developing countries have sought to make acceptance of certain environmental obligations dependent upon the provision of financial assistance; relatedly, other countries have sought to ensure that environmental treaties establish effective mechanisms to verify compliance, to prevent the competitive economic advantages which might flow from non-compliance.

These two features have caused environmental treaties to break new ground in the development of international legal techniques. Treaties such as the 1987 Montreal Protocol, the 1992 Climate Change Convention, the 1992 Biodiversity Convention and the 2001 POPs Convention provide for 'compensatory' finance to be made available to developing countries to

¹⁸ Respectively, at Chapter 9, pp. 351–5; Chapter 10, pp. 421–2; Chapter 11, pp. 498–9 and 536–8 and Chapter 18, pp. 879–81.

¹⁹ See e.g. 2000 Biosafety Protocol, Chapter 10, pp. 397–403; 1998 Chemicals Convention, Chapter 12, pp. 587–9; 2001 POPs Convention, Chapter 12, 581–3.

²⁰ See D. Esty, 'Revitalizing Environmental Federalism', 95 *Michigan Law Review* 570 (1996). For a compelling alternative view, see R. Revesz, 'Rehabilitating Interstate Competition: Rethinking the "Race to the Bottom" Rationale for Federal Environmental Regulation', 67 *New York University Environmental Law Review* 1210 (1992); and R. Revesz, 'The Race to the Bottom and Federal Environmental Regulation: A Response to Critics', 82 *Minnesota Law Review* 535 (1997). In the context of the NAFTA rules on direct foreign investment, and the failed OECD negotiation for a Multilateral Agreement on Investment, see Chapter 18, pp. 900–1.

²¹ 1992 Climate Change Convention, Art. 3. ²² Chapter 4, pp. 132–7.

enable them to meet certain 'incremental costs' of implementing their obligations, and provide for subsidiary bodies to verify compliance and implementation. This linkage has in turn led to the creation of specialised funding arrangements within existing institutions, in particular the World Bank and the regional development banks, such as the Global Environment Facility (GEF).

The integration of environmental protection and economic development has added authority to international environmental law, drawing it out of the margins of international law. Mainstreaming, however, has come at a price. The development of new norms has slowed down and concerns arise that these arrangements may merely serve to subsume environmental considerations and perpetuate an approach to international economic practices and arrangements that compounds environmental problems. This concern refers to the integration of environment and development that underpins the concept of sustainable development. This concept finds reflection in many international instruments,²³ as well as decisions of international courts.²⁴

Other Social Objectives

Science and economics are not the only factors to influence international environmental decision-making, or the settlement of environmental disputes. In recent years, there has been increasing recognition of a place for social and other values as legitimate factors influencing environmental decision-making. The 2000 Biosafety Protocol, for example, allows parties, in reaching decisions under the Protocol, to

take into account, consistent with their international obligations, socio-economic considerations arising from the impact of living modified organisms on the conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities.²⁵

In a similar vein, the Appellate Body has recently found that the 'public morals' exception in the General Agreement on Tariffs and Trade (GATT) provided justification for an EU ban on seal products.²⁶ Despite such developments, provisions in international environmental treaties requiring public participation in decision-making remain limited.

Sustainable Development

The concept of sustainable development is found in many environmental treaties and other instruments, including several concluded in the period prior to the publication of the Brundtland Report in 1987.²⁷ Nevertheless, the Brundtland Report is commonly viewed as the point at which sustainable development became a broad global policy objective and set the international community on the path that led to 'international law in the field of sustainable development'.²⁸

²³ Chapter 6, pp. 217–29.

²⁴ e.g. the ICJ in the *Case Concerning the Gabčíkovo–Nagymaros Project* (1997) ICJ Reports 7, at para. 140 (Chapter 9, pp. 345–51); the WTO Appellate Body, in the *Shrimp/Turtle* case, Chapter 18, pp. 859–65.

²⁵ Art. 26(1); see R. H. Khawaja, 'Socio-Economic Considerations', in C. Bail, R. Falkner and H. Marquard (eds.), *The Cartagena Protocol on Biosafety* (London: Earthscan, 2002), 361.

²⁶ Chapter 18, p. 870. ²⁷ Chapter 6, pp. 217–29.

²⁸ Rio Declaration, Principle 27; Agenda 21, Chapter 39, para. 39.1.

Is there any difference between international law in the field of sustainable development and international environmental law?

The Brundtland Report defined sustainable development as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’. It contains two key concepts: the concept of needs, in particular the essential needs of the present generation, and the idea of limits imposed by the state of technology and social organisation on the environment’s ability to meet present and future needs.²⁹ The Brundtland Report identified critical objectives for environment and development policies reflected in the concept of sustainable development:

- reviving growth and changing its quality;
- meeting essential needs for jobs, food, energy, water and sanitation;
- ensuring a sustainable level of population;
- conserving and enhancing the resource base;
- reorienting technology and managing risk; and
- merging environment and economics in decision-making.³⁰

Subsequent developments have fleshed out these principles, although many ambiguities remain. Sustainable development was recognised as an international legal term by the ICJ in the *Gabčíkovo–Nagymaros* case, and as having practical legal consequences by the WTO Appellate Body in the *Shrimp/Turtle* case.³¹ Since then, other cases have sought to give effect to the concept, including the *Iron Rhine* arbitration and the ICJ decision in *Pulp Mills*.³² The international law of sustainable development encompasses but is not limited to international environmental law; it also includes the social and economic dimensions of development, the participatory role of major groups, and financial and other means of implementation.³³ As will be seen in subsequent chapters, the integration of environmental considerations with other social objectives has led to development of a human rights/environment jurisprudence,³⁴ and the integration of environment into matters such as international trade and investment, peace and security matters, and criminal law (reflected, in a limited way, in the Statute of the International Criminal Court).³⁵

THE INTERNATIONAL LEGAL ORDER

Environmental issues pose significant challenges for the traditional international legal order, in at least three ways. They pose challenges, first, for the legislative, administrative and adjudicative functions of international law; second, for the manner in which international legal arrangements are organised (i.e. along territorial lines); and, third, for the various actors who are considered to be members of the international community and participants in the various

²⁹ Report of the World Commission on Environment and Development, *Our Common Future* (1987), 43 (the Brundtland Report).

³⁰ *Ibid.*, 49–65.

³¹ Chapter 6, pp. 217–29. See generally P. Sands, ‘International Courts and the Application of the Concept of “Sustainable Development”’, 3 *Max Planck Yearbook of United Nations Law* 389–407 (1999).

³² Chapter 6, pp. 217–229. ³³ Sections I, III and IV of Agenda 21. ³⁴ Chapter 17, pp. 819–27.

³⁵ *Ibid.*, p. 834 and Chapter 18, pp. 843–99.

processes and practices of the international legal order.³⁶ The ability of the international legal order to address these three aspects, in the context of environmental issues, determines whether international law can truly be marshalled to promote effective environmental protection, or whether it becomes merely 'the faithful friend of a family overtaken by time'.³⁷ It remains to be seen whether a diminishing conception of sovereignty in the face of an emerging international judiciary, together with a more inclusive, accessible and diverse international legal order, leads to any greater protection of the environment.³⁸

The Functions of International Law

International law and institutions serve as the principal framework for international cooperation and collaboration between members of the international community in their efforts to protect the local, regional and global environment. At each level, the task becomes progressively more complex as new actors and interests are drawn into the legal process: whereas just two states negotiated the nineteenth-century fishery conservation conventions, more than 150 states negotiated the 1992 Biodiversity Convention and the 2000 Biosafety Protocol. Treaties of 'universal participation' such as the Montreal Ozone Protocol now require consensus decisions to be reached by the 197 states parties.

In all cases, however, the principles and rules of international law serve similar functions, in contributing to the development of consciousness about the need for action: to provide a framework within which the various members of the international community may cooperate, establish norms of behaviour and resolve their differences. The proper functions of international law are legislative, administrative and adjudicative functions. The legislative function, which is considered in Chapter 4, provides for the creation of legal principles and rules that impose binding obligations requiring states and other members of the international community to conform to certain norms of behaviour. These obligations place limits upon the activities that may be conducted or permitted because of their actual or potential impact upon the environment. The impact might be felt within the borders of a state, or across the boundaries of two or more states, or in areas beyond the jurisdiction and control of any state.

The administrative function of international law allocates tasks to various actors to ensure that the standards imposed by the principles and rules of international environmental law are applied.³⁹ The adjudicative function of international law aims to provide mechanisms or fora to prevent and peacefully settle differences or disputes which arise between members of the international community involving the use of natural resources or the conduct of activities which will impact upon the environment. Since the mid 1990s, the adjudicative function has assumed increasing importance in interpreting, applying and even developing rules of international law in the field of the environment.

³⁶ For a more complete exploration of these issues, see P. Sands, *Vers une Transformation du Droit International? Institutionnaliser le Doute* (Paris: Editions A. Pedone, 2000).

³⁷ Allott, *Eunomia*, para. 16.3. ³⁸ Sands, 'Turtles and Torturers', 558.

³⁹ According to some scholars, the growth of international rules in this area has led to the development of Global Administrative Law. See B. Kingsbury, N. Krisch and R. Stewart, 'The Emergence of Global Administrative Law' 68 *Law and Contemporary Problems* 15 (2005).

Sovereignty and Territory

The international legal order regulates the activities of an international community comprising states, international organisations and non-state actors. States have the primary role in the international legal order, as both international lawmakers and holders of international rights and obligations. Under international law, states are sovereign and have equal rights and duties as members of the international community, notwithstanding differences of an economic, social, political or other nature.⁴⁰ The doctrine of the sovereignty and equality of states has three principal corollaries, namely that states have:

- (1) a jurisdiction, *prima facie* exclusive, over a territory and a permanent population living there;
- (2) a duty of non-intervention in the area of exclusive jurisdiction of other states; and
- (3) the dependence of obligations arising from customary law and treaties on the consent of the obligor.⁴¹

The sovereignty and exclusive jurisdiction of the 200 or so states over their territory means, in principle, that they alone have the competence to develop policies and laws in respect of the natural resources and the environment of their territory, which comprises:

- (1) the land within its boundaries, including the subsoil;
- (2) internal waters, such as lakes, rivers and canals;⁴²
- (3) the territorial sea, which is adjacent to the coast, including its seabed, subsoil and the resources thereof;⁴³ and
- (4) the airspace above its land, internal waters and territorial sea,⁴⁴ up to the point at which the legal regime of outer space begins.⁴⁵

Additionally, states have limited sovereign rights and jurisdiction over other areas, including: a contiguous zone adjacent to the territorial seas;⁴⁶ the resources of the continental shelf, its seabed and subsoil;⁴⁷ certain fishing zones;⁴⁸ and the 'exclusive economic zone'.⁴⁹ It follows that certain areas fall outside the territory of any state, and in respect of these no state has exclusive jurisdiction. These areas, which are sometimes referred to as the 'global commons', include the high seas and its seabed and subsoil, outer space and, according to a majority of states, the Antarctic. The atmosphere is also sometimes considered to be a part of the global commons. This apparently straightforward international legal order worked satisfactorily as an organising structure until technological developments permeated national boundaries. This structure does not, however, coexist comfortably with an environmental order that consists of a biosphere of interdependent ecosystems, which do not respect artificial national territorial boundaries. Many natural resources and their environmental components are ecologically shared. The use by one state of natural resources within its territory will invariably have consequences for the use of

⁴⁰ Declaration on Principles of International Law Concerning Friendly Relations and Co-operation Among States in Accordance with the Charter of the United Nations, UNGA Res. 2625 (XXV) (1970).

⁴¹ I. Brownlie, *Principles of Public International Law* (Oxford: Clarendon Press, 1990, 4th edn), 287.

⁴² 1982 UNCLOS, Art. 8. ⁴³ *Ibid.*, Art. 2. On archipelagic waters as national territory, see *ibid.*, Art. 48.

⁴⁴ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (Harlow: Longman, 1992, 9th edn), vol. 1, 650–61.

⁴⁵ *Ibid.*, 826–45. ⁴⁶ 1982 UNCLOS, Art. 33. ⁴⁷ *Ibid.*, Arts. 76 and 77.

⁴⁸ *Fisheries Jurisdiction* cases (1974) ICJ Reports 3, at para. 52.

⁴⁹ 1982 UNCLOS, Arts. 55 and 56; Chapter 5, pp. 150–1; and Chapter 11, pp. 514–16.

natural resources and their environmental components in another state.⁵⁰ This is evident where a river runs through two or more countries, or where living resources migrate between two or more sovereign territories. Even apparently innocent activities in one country, such as the release of greenhouse gases or (possibly) genetically modified organisms, can have significant effects upon the environment of other states or in areas beyond national jurisdiction. Ecological interdependence poses a fundamental challenge for international law, and explains why international cooperation and the development of international environmental standards are indispensable: the challenge for international law in the world of sovereign states remains to reconcile the fundamental independence of each state with the inherent and fundamental interdependence of the environment.

An additional but related question arises as a result of existing territorial arrangements that leave certain areas outside any state's territory: how can international law ensure the protection of areas beyond national jurisdiction? While it is clear that under international law each state may have environmental obligations to its citizens and to other states which may be harmed by its activities, it is less clear whether such an obligation is owed to the international community as a whole.⁵¹

International Actors

A second salient issue concerns the membership of the international community and the participation of actors in the development and application of the principles and rules of international environmental law. In the environmental field, it is clear that international law has moved away from an approach which treats international society as comprising a community of states, and increasingly encompasses the persons (both legal and natural) within and among those states. This feature is similar to that which applies in the field of international human rights law, where non-state actors and international organisations also have an expanded role.

This reality is reflected in developments in relation to both lawmaking and law enforcement. Early on, the UNCED process recognised the need for the further development of the role of international organisations and non-state actors in virtually all aspects of the international legal process that relates to environment and development.⁵² The 1998 Aarhus Convention provides the first clear rules on the rights of participation of non-state actors, in relation to access to information and justice, and the right to participate in environmental decision-making.⁵³ Although the Convention's requirements apply at the national level, there is no reason why this rationale should not equally apply at the international level. Developments in international jurisprudence to accept *amicus* briefs from non-governmental and other organisations in environmental cases reinforce this trend.⁵⁴

⁵⁰ On 'shared natural resources', see Chapter 2, pp. 35–6.

⁵¹ On the enforcement of international rights owed to the international community as a whole, see Chapter 5, pp. 155–6.

⁵² Chapter 3, pp. 55–8. ⁵³ Chapter 5, pp. 89–96.

⁵⁴ See generally C. Zengerling, *Greening International Jurisprudence: Environmental NGOs before International Courts, Tribunals and Compliance Committees* (Leiden: Martinus Nijhoff, 2013).

THE ENVIRONMENT AND INTERNATIONAL LAW: DEFINING TERMS

International environmental law comprises those substantive, procedural and institutional rules of international law that have as their primary objective the protection of the environment. These rules form a set of related legal developments and treaties rather than a coherent 'regime' (such as, for instance, exists under the auspices of the World Trade Organization).⁵⁵ Moreover, international environmental law is increasingly seen to encompass environmental rules of regional or supranational scope that exist 'beyond the state'. Scholars have sought to capture these developments through concepts of 'global' and 'transnational' environmental law.⁵⁶

Just as the notion of 'international' law has evolved over time, so the concept of 'environment' has developed significantly under the influence of a diverse range of inputs, including philosophy, religion, science and economics.⁵⁷ Legal definitions of 'environment' conventionally take dictionaries as their starting point, which define 'environment' as 'the objects or the region surrounding anything'.⁵⁸ Taking this approach, the term encompasses both the features and the products of the natural world and those of human civilisation. On this definition, the environment is broader than, but includes, 'nature', which is typically seen to be concerned only with features of the natural world itself.⁵⁹ 'Ecology', on the other hand, is a science related to the environment and to nature that is concerned with animals and plants, and is 'that branch of biology which deals with the relations of living organisms to their surroundings, their habits and modes of life'.⁶⁰ The 'ecosystem' is 'a unit of ecology . . . which includes the plants and animals occurring together plus that part of their environment over which they have an influence'.⁶¹ The modern practice of ecological science is concerned not just with the interrelationship between plants and animals and their surroundings, but also encompasses human interactions with, and interventions in, natural systems.⁶²

The legal definition of the 'environment' and related concepts is important at two levels. At a general level, it defines the scope of the legal subject and the competence of, say, international organisations. Thus, the failure of the 1946 International Whaling Convention to define the term 'whale' led to disputes over whether the International Whaling Commission has competence over dolphins;⁶³ and the text of CITES was unclear as to whether its provisions applied to artificially propagated plants grown under controlled conditions in a 'non-natural environment'.⁶⁴ More specifically, the definition of the 'environment' assumes significance in relation to efforts to establish rules governing liability for damage to the environment.⁶⁵

⁵⁵ Chapter 18, pp. 843ff.

⁵⁶ For an introduction to these developing areas of scholarship, see the inaugural issue of *Transnational Environmental Law* 1(1) (2012).

⁵⁷ L. Godden and J. Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (Oxford: Oxford University Press, 2010), ch. 2.

⁵⁸ *Compact Oxford English Dictionary* (Oxford: Oxford University Press, 1991, 2nd edn), 523. ⁵⁹ *Ibid.*, 1151.

⁶⁰ *Ibid.*, 494. ⁶¹ *Ibid.*

⁶² A. Goudie, *The Human Impact on the Natural Environment* (Chichester: Wiley, 2013, 7th edn).

⁶³ Chapter 11, pp. 534–5. ⁶⁴ CITES Conf. Res. 8.17 (1992).

⁶⁵ Chapter 16, pp. 741–2. The definitions of 'environment' and 'environmental resources' are also important for economists. In 1974, the Norwegian Department of Natural Resources developed and introduced a system of natural resource accounting and budgeting which divided resources into two categories: material resources and environmental resources. Material resources included minerals (minerals, hydrocarbons, stone, gravel and sand), biological resources (in the air, water, on land and in the ground) and inflowing resources (solar radiation, the hydrological cycle, wind and ocean currents). Environmental resources are air, water, soil and space. See D. W. Pearce, A. Markandya and E. B. Barbier (eds.), *Blueprint for a Green Economy* (London: Earthscan, 1989).

Legal definitions of the 'environment' reflect scientific categorisations and groupings, as well as political acts that incorporate cultural and economic considerations. A classical scientific approach divides environmental issues into 'compartments' (although this has been challenged by the discipline of ecology). These compartments include the atmosphere, atmospheric deposition, soils and sediments, water quality, biology and humans.⁶⁶ Scientific definitions are transformed by the political process into the legal definitions found in treaties; although 'environment' does not have a generally accepted usage as a term of art under international law, many agreements identify the various media included in the term.

The approaches to defining the 'environment' do nevertheless vary. Early treaties tended to refer to 'flora and fauna' rather than the environment,⁶⁷ restricting the scope of their application. Article XX(b) and (g) of the GATT refer not to the environment but to 'human, animal or plant life or health' and to the 'conservation of exhaustible natural resources', and these terms are considered by some to have limited the scope of permissible exceptions to the rules of free trade, particularly in the context of the narrow construction given to the terms used by WTO dispute settlement panels.⁶⁸ Although the 1972 Stockholm Declaration did not define the environment, Principle 2 refers to the natural resources of the Earth as including 'air, water, land, flora and fauna and . . . natural ecosystems'. The Stockholm Declaration also recognises, as the Preamble makes clear, that the environment of natural resources should be distinguished from the 'man-made' environment, which includes, in particular, the living and working environment.

Those treaties that do refer to the environment and seek to include some form of working definition tend to adopt broad definitions. Under the 1974 Nordic Convention, 'environmentally harmful activities' are those that result in discharges 'into water courses, lakes or the sea, and the use of land, the sea bed, buildings or installations'.⁶⁹ Under the 1977 ENMOD Convention, 'environmental modification' refers to changing the 'dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space'.⁷⁰ As used in the 1979 LRTAP Convention, the environment includes 'agriculture, forestry, materials, aquatic and other natural ecosystems and visibility'.⁷¹ Under the 1991 Espoo Convention and the 1992 Watercourses Convention, the 'environment', which is defined in terms of impacts, includes 'human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors'.⁷² In similar terms, the 1991 Antarctic Environment Protocol protects: the climate and weather patterns; air and water quality; atmospheric, terrestrial (including aquatic), glacial or marine environments; fauna and flora; and areas of biological, scientific, historic, aesthetic or wilderness significance.⁷³ Other agreements that use the term 'environment' do not define it. The 1982 United Nations Convention on the Law of the Sea does not define 'marine environment', although it appears to include ecosystems, habitats, threatened or endangered species and other forms of marine life, and atmospheric pollution.⁷⁴

⁶⁶ UNEP, *Environmental Data Report* (1992), 3. ⁶⁷ Chapter 2, pp. 22–6. ⁶⁸ Chapter 18, pp. 843–99.

⁶⁹ Art. 1. ⁷⁰ Art. II. ⁷¹ Art. 7(d).

⁷² 1991 Espoo Convention, Art. 1(vii); and 1997 Watercourses Convention, Art. 1(2). ⁷³ Art. 3(2).

⁷⁴ Art. 194(3)(a) and (5). See also the 1992 OSPAR Convention, which appears to distinguish between the 'marine environment' and the 'flora and fauna which it supports' (Preamble).

More specific international legal terms are also being used and are subject to carefully negotiated definition. Examples include definitions of biological resources,⁷⁵ the climate system⁷⁶ and the ozone layer.⁷⁷ Other terms frequently used in international agreements relating to environmental matters and for which specific legal definitions have been established include 'pollution',⁷⁸ 'conservation',⁷⁹ 'damage',⁸⁰ 'adverse effects'⁸¹ and 'sustainable use' or 'management'.⁸²

CHALLENGES FOR INTERNATIONAL ENVIRONMENTAL LAW

Responding to the interdependence of ecosystems and defining the scope of the 'environment' protected are not the only challenges to confront international environmental law: other challenges cut across the various areas of international environmental regulation discussed in the book.

First, there are serious questions over the adequacy of the legislative process in international environmental law. These questions relate to substance (whether international law can be marshalled effectively to promote environmental protection) and procedure (whether multilateral processes based upon securing consensus among states are feasible). A related issue is the extent to which international environmental law continues to be underpinned by general principles for guidance on how to achieve central objectives, including sustainable development. Legislative developments and international environmental jurisprudence since UNCED have done little to flesh out the practical significance of such principles for reconciling environmental protection with economic development.

Second, even where international environmental rules exist, there are difficulties of enforcement, particularly where environmental protection objectives come into conflict with strong economic interests. The steady increase in international environmental jurisprudence over the past two decades might indicate that prospects for enforcement are improving, but the reality is that few international courts or tribunals have shown themselves to be willing to give a hard edge to norms of environmental protection.

Third, many of the rules of international environmental law depend for their effectiveness on domestic implementation. Ambitious environmental protection goals at the international level will not be meaningful unless they are implemented at the national level, and this requires greater attention to be given to the reasons why international rules on environmental protection suffer from inadequate domestic implementation.

Fourth, although the importance of scientific knowledge to international environmental regulation is widely acknowledged, questions remain around how best to marshal scientific advice in the legislative, administrative and adjudicative processes of international environmental law. It is plain that, in many instances, powerful political and economic factors cause states – and other international lawmakers and policymakers such as the European Commission – to take inadequate account of clear scientific advice. This is the case for matters such as climate

⁷⁵ '[G]enetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity' (1992 Biodiversity Convention, Art. 2); see also the definition of biological diversity, Chapter 10, p. 834.

⁷⁶ '[T]he totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions' (1992 Climate Change Convention, Art. 1(3)).

⁷⁷ '[T]he layer of atmospheric ozone above the planetary boundary layer' (1985 Vienna Convention, Art. 1(1)).

⁷⁸ Chapter 7, p. 261; Chapter 11, pp. 459–61; and Chapter 16, p. 741.

⁷⁹ Chapter 6, pp. 224–5; Chapter 10, pp. 386–8. ⁸⁰ Chapter 16, p. 741. ⁸¹ *Ibid.*

⁸² Chapter 6, pp. 222–3; Chapter 10, p. 388–90; and Chapter 11, pp. 513ff.

change, biodiversity conservation and fisheries protection. In other areas, such as those at the interface between international environmental law and trade law, the concern is that a limited range of expert, scientific views is allowed to be privileged over other information or values that shape public perceptions of environmental risk.

Fifth, the growth of international environmental law in the last few decades, and its penetration into a variety of other international areas including trade, human rights, peace and security, and disaster management raises important challenges of integration and interlinkage. These challenges are only likely to grow as we enter the age of what some scientists call the Anthropocene – a new geological era characterised by the extent of human impact on the global environment.⁸³ One aspect of the integration/interlinkage problem relates to coordinating different international environmental rules relating to connected or overlapping environmental issues, for example diverse international rules concerning the protection of marine biodiversity. Another aspect concerns how to ensure that different areas of international law are complementary, rather than conflictual, in seeking to deal with a common global issue, whether this is the dissemination of genetically modified foodstuffs and crops, or providing for peoples displaced by the adverse effects of climate change on their homelands. The extent to which international environmental law can meet this challenge of integration and interlinkage will ultimately determine its capacity to respond to the issue posed at the beginning of this chapter: that of reconciling international law with the inherent and fundamental interdependence of the world environment.

FURTHER READING

There now exists a vast literature on general and specialised aspects of international environmental law, supplemented by a significant body of online resources. In the book's discussion of treaties and case law – where possible – we have included references to websites where these primary law sources can be found. There is now also an extensive literature on broader questions of environmental governance, policy, science and economics. These areas often intertwine with legal issues in research and practice. However, it is beyond the scope of this text to catalogue relevant sources on these topics.

The list that follows of further resources for research in the field of international environmental law is intended to be indicative only, and any omissions should not be taken to indicate a qualitative judgement on that work.

INTERNATIONAL ENVIRONMENTAL LAW: TEXTS, ARTICLES AND HISTORY

An extensive literature on international environmental law developed in the mid 1980s, although the first treatises appeared only in 1989 (Alexandre Kiss) and 1992 (Patricia Birnie and Alan Boyle), followed in 1994 by the first edition of this book. Earlier works addressed specific aspects of international environmental protection and the conservation of natural resources, and little of the early literature addressed economic aspects. Key texts and resources on international environmental law and its historical development include:

⁸³ For an introduction see J. Stromberg, 'What Is the Anthropocene and Are We in It?', *Smithsonian Magazine*, January 2013, at www.smithsonianmag.com/science-nature/what-is-the-anthropocene-and-are-we-in-it-164801414/?no-ist

- Academie de Droit International de la Haye, *Colloque, The Protection of the Environment and International Law* (1973);
- L. B. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 (1973);
- R. A. Falk, 'The Global Environment and International Law: Challenge and Response', 23 *Kansas Law Review* 385 (1975);
- A. L. Springer, 'Towards a Meaningful Concept of Pollution in International Law', 26 *International and Comparative Law Quarterly* 531 (1977);
- S. Lyster, *International Wildlife Law: An Analysis of International Treaties Concerned with the Conservation of Wildlife* (Cambridge: Grotius, 1985) [2011, 2nd edn, by M. Bowman, P. Davies and C. Redgwell];
- UN World Commission on Environment and Development, R. D. Munro and J. G. Lammers (eds.), *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (London: Graham & Trotman 1987);
- P. Sands, 'The Environment, Community and International Law', 30 *Harvard International Law Journal* 393 (1989);
- P. H. Sand, *Lessons Learned in Global Environmental Governance* (Washington, DC: World Resources Institute, 1990);
- D. B. Magraw (ed.), *International Law and Pollution* (Philadelphia, PA: University of Pennsylvania Press, 1991);
- O. Schachter, 'The Emergence of International Environmental Law', 44 *Journal of International Affairs* 457 (1991);
- E. Brown Weiss (ed.), *Environmental Change and International Law* (Tokyo/New York: United Nations University Press, 1993);
- P. Sands (ed.), *Greening International Law* (London: Earthscan, 1993);
- C. Stone, *The Gnat Is Older than Man: Global Environment and Human Agenda* (Princeton, NJ: Princeton University Press, 1993);
- A. Kiss, *Droit International de l'Environnement* (Paris: Pedone, 1994, 2nd edn);
- S. Murase, 'Perspectives from International Economic Law on Transnational Environmental Issues', 253 *Recueil des Cours* 283 (1995);
- P. Dupuy, 'Ou en Est le Droit International de l'Environnement à la Fin du Siècle?', *Revue General de Droit International Public* 873 (1997);
- A. Boyle and D. Freestone, *International Law and Sustainable Development* (1999);
- J. Juste Ruiz, *Derecho Internacional del Medio Ambiente* (New York: McGraw-Hill, 1999);
- A. Kiss and D. Shelton, *International Environmental Law* (London: Graham & Trotman, 1999, 2nd edn; 2003, 3rd edn);
- A. Gillespie, *International Environmental Law, Ethics and Policy* (Oxford: Oxford University Press, 2001);
- D. Hunter, J. Salzman and D. Zaelke (eds.), *International Environmental Law and Policy (Casebook)* (New York: Foundation Press, 2001, 2nd edn; 2007, 3rd edn; 2011, 4th edn; 2015, 5th edn);
- P. Birnie and A. Boyle, *International Law and the Environment* (Oxford: Oxford University Press, 2002, 2nd edn; 2009, 3rd edn, with C. Redgwell);
- D. French, *International Law and Policy of Sustainable Development* (Manchester: Manchester University Press, 2005);
- D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007);
- A. Kiss and D. Shelton, *Guide to International Environmental Law* (London: Graham & Trotman, 2007);
- M. Fitzmaurice, *Contemporary Issues in International Environmental Law* (Cheltenham, UK: Edward Elgar, 2009);
- D. Bodansky, *The Art and Craft of International Environmental Law* (Cambridge, MA: Harvard University Press, 2010);

- M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010);
- D. Hunter, *International Environmental Law and Policy* (New York: Foundation Press, 2010);
- D. Leary and B. Pisupati (eds.), *The Future of International Environmental Law* (Tokyo/New York: United Nations University Press, 2010);
- S. Alam, M. J. H. Bhuiyan, T. M. R. Chowdhury and E. J. Techera, *Routledge Handbook of International Environmental Law* (New York: Routledge, 2013);
- R. S. Axelrod and S. D. VanDeveer (eds.), *The Global Environment: Institutions, Law and Policy* (2014, 4th edn);
- A. Gillespie, *International Environmental Law, Policy and Ethics* (Oxford: Oxford University Press, 2014, 2nd edn);
- P.-M. Dupuy and J. Viñuales, *International Environmental Law* (2015);
- A. Shawkat, A. Sumudu and C. G. Gonzalez, *International Environmental Law and the Global South* (2015).

SOURCES OF INTERNATIONAL ENVIRONMENTAL LAW

Primary Materials

The Internet is now the leading source of treaties, acts of international organisations (including Conferences of the Parties), case law of international courts and tribunals, and other primary materials. A useful website for accessing a range of environmental treaty texts and some court decisions is Ecolex (www.ecolex.org), which is jointly maintained by the FAO, UNEP and the IUCN. Several organisations and university libraries have also produced electronic resource guides for researching international environmental law. A good example is EISIL (www.eisil.org/index.php?sid=850442477&cat=18&tt=sub_pages), an electronic resource guide on international environmental law developed by the American Society of International Law.

Beyond electronic sources, there is a specialised literature that addresses the primary sources of international environmental law. Most are collections of selected materials that provide information on treaties and other international acts. Certain primary sources nevertheless remain obscure: early bilateral agreements are frequently only available directly from the countries or organisations involved in their promulgation.

Prominent examples of collections of multilateral treaties and other international law instruments in the environmental field include those listed below.

- W. E. Burhenne (ed.), *International Environmental Law: Multilateral Treaties* (looseleaf, The Hague/London: Kluwer, 1974–)
- B. Rüter and B. Simma, *International Protection of the Environment: Treaties and Related Documents* (looseleaf, Dobbs Ferry, NY: Oceana, 1990–5)
- UNEP, *Selected Multilateral Treaties in the Field of the Environment* (vol. 1, A. C. Kiss (ed.), 1983; vol. 2, I. Rummel-Bulska and S. Osafo (eds.), 1991)
- E. Brown Weiss, P. C. Szasz and D. B. Magraw, *International Environmental Law: Basic Instruments and References* (Dobbs Ferry, NY: Transnational, 1992)
- H. Hohmann (ed.), *Basic Documents of International Environmental Law* (London: Graham & Trotman, 1992)
- W. E. Burhenne (ed.), *International Environmental Soft Law: Collection of Relevant Instruments* (The Hague/London: Kluwer, 1993)
- P. Birnie and A. Boyle, *Basic Documents on International Law and the Environment* (Oxford: Oxford University Press, 1995)

- L. Boisson de Chazournes, R. Desgagné and C. Romano (eds.), *Protection Internationale de l'Environnement: Recueil d'Instruments Juridiques* (Paris: Pedone, 1998; 2005, 2nd edn)
- P. Sands and P. Galizzi, *Basic Documents in International Environmental Law* (Cambridge: Cambridge University Press, 2003)
- D. Hunter, J. Salzman and D. Zaelke (eds.), *International Environmental Law and Policy: Treaty Supplement* (New York: Foundation Press, 2011)

INTERNATIONAL ENVIRONMENTAL JURISPRUDENCE

International courts and tribunals maintain their own websites where judgments can be readily accessed. Some arbitration decisions may be more difficult to access electronically. Alternative print collections that contain copies and analysis of many important environmental decisions include those listed below.

- C. Robb (ed.), *International Environmental Law Reports 1: Early Decisions* (Cambridge: Cambridge University Press, 1999)
- C. Robb (ed.), *International Environmental Law Reports 2: Trade and Environment* (Cambridge: Cambridge University Press, 2001)
- C. Robb (ed.), *International Environmental Law Reports 3: Human Rights and Environment* (Cambridge: Cambridge University Press, 2002)
- A. Palmer and C. Robb (eds.), *International Environmental Law Reports 4: International Environmental Law in National Courts* (Witney, UK: Lawtext, 2005)
- K. Lee (ed.), *International Environmental Law Reports 5: International Environmental Law in International Tribunals* (Cambridge: Cambridge University Press, 2007)
- T. Stephens, *International Courts and Environmental Protection* (Cambridge: Cambridge University Press, 2009)

SECONDARY MATERIALS – JOURNALS

A growing number of academic and practitioner journals provide sources of information on important international legal developments, and articles on specific aspects of international environmental law. The *Yearbook of International Environmental Law* is an especially useful source for annual developments, including materials on municipal practice (including the implementation of international legal obligations). Articles on environmental issues are also regularly featured in general international law journals.

An increasing number of international law journals are included in legal research databases such as Westlaw and Lexis. Many authors also publish works of international environmental law analysis on online research databases such as SSRN, Research Gate and bepress.

WEBSITES

Every international organisation and most international environmental agreements have their own websites. These are indicated in the text at appropriate sections.

There is no single website which provides one-stop shopping for international environmental law. Of particular use, however, is www.google.com, which provides easy access to international environmental agreements, decisions and other acts of international organisations, and municipal and international court decisions. It also provides some guidance on literature sources.

2

History

CHAPTER OUTLINE

This chapter addresses the historical development of international environmental law over the course of four distinct periods:

1. early international environmental conventions prior to the establishment of the United Nations;
2. creation of the United Nations up to the Stockholm Conference on the Human Environment in 1972;
3. from Stockholm to the Rio Earth Summit (UNCED) in 1992; and
4. beyond UNCED, including the World Summit on Sustainable Development (2002), the Rio+20 Summit (2012) and the post-2015 development agenda and the UN Sustainable Development Goals.

For each period, the chapter identifies the principal treaty, case law and institutional developments, and the contribution they have made to the evolution of international environmental law.

INTRODUCTION

Modern international environmental law can be traced directly to international legal developments that took place in the second half of the nineteenth century. Thus, although the current form and structure of the subject emerged in the mid 1980s, a proper understanding of modern principles and rules requires a historic sense of earlier scientific, political and legal developments.¹ International environmental law has evolved over four distinct periods, reflecting developments in scientific knowledge, the application of new technologies and an understanding of their impacts, changes in political consciousness and the changing structure of the international legal order and institutions.²

A first period began with bilateral fisheries treaties in the nineteenth century, and concluded with the creation of the new international organisations in 1945. During this period, peoples and nations began to understand that the process of industrialisation and development required

¹ See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), ch. 4; P. Sand, 'The Evolution of International Environmental Law', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), ch. 2; D. Bodansky, *The Art and Craft of International Environmental Law* (Cambridge, MA: Harvard University Press, 2010), ch. 2.

² For another approach, identifying traditional, modern and postmodern eras, see T. Kuokkanen, *International Law and the Environment: Variations on a Theme* (The Hague: Kluwer, 2002).

limitations on the exploitation of certain natural resources (flora and fauna) and the adoption of appropriate legal instruments. The second period commenced with the creation of the UN and culminated with the UN Conference on the Human Environment, held in Stockholm in June 1972. Over this period, a range of international organisations with competence in environmental matters was created, and legal instruments were adopted, at both the regional and the global levels, which addressed particular sources of pollution and the conservation of general and particular environmental resources, such as oil pollution, nuclear testing, wetlands, the marine environment and its living resources, the quality of freshwaters and the dumping of waste at sea. The third period ran from the 1972 Stockholm Conference and concluded with the UN Conference on Environment and Development (UNCED) in June 1992. During this period, the UN tried to put in place a system for coordinating responses to international environmental issues, regional and global conventions were adopted, and for the first time the production, consumption and international trade in certain products were banned at the global level. The fourth period was set in motion by UNCED, and may be characterised as a period of integration: when environmental concerns should, as a matter of international law and policy, be integrated into all activities and into the broader development agenda concerned with poverty eradication and improving human health. This has also been the period in which increased attention has been paid to compliance with international environmental obligations, with the result that there is now a well-developed body of international jurisprudence.

In tracing the development of the subject, a number of themes are discernible. First, the development of principles and rules of international environmental law – through treaties, other international acts and custom – has tended to react to events or incidents or the availability of scientific evidence, rather than anticipate general or particular environmental threats and put in place an anticipatory legal framework. Second, developments in science and technology have played a significant catalytic role: without the availability of scientific evidence, new rules of law are unlikely to be put in place. Third, as is reflected throughout this book, the principles and rules of international law have developed as a result of a complex interplay between governments, non-state actors and international organisations. The extent to which a particular area is subject to legal rules will depend upon pressure being imposed by non-state actors, the existence of appropriate institutional fora in which rules can be developed, and sufficient will on the part of states to transform scientific evidence and political pressures into legal obligations. And, fourth, it is only relatively recently – within the past two decades – that issues of international environmental law have become a regular subject of international adjudication, and that international courts have begun to contribute to the definition and application of the subject.

FROM EARLY FISHERIES CONVENTIONS TO THE CREATION OF THE UNITED NATIONS

Early attempts to develop international environmental rules focused on the conservation of wildlife (fisheries, birds and seals) and, to a limited extent, on the protection of rivers and seas. International legal developments followed the research efforts of scientists in the late eighteenth and nineteenth centuries, including: the work of Count Buffon, which contrasted the appearance of inhabited life with uninhabited life; the studies by Fabre and Surrall of flooding, siltation, erosion and the division of watercourses brought about by deforestation in the Alps; and the

conclusions of de Saussure and von Humboldt that deforestation had lowered water levels of lakes in the Alps and in Venezuela.³ By the mid-eighteenth century, the relationship between deforestation and the drying-up of water basins was widely observed. In the island of Ascension, concern for flora and fauna coincided with industrialisation and the use of mineral resources. This led to the adoption of early environmental legislation at the national level.

there was an excellent spring situated at the foot of the mountain originally covered with wood; the spring became scanty and dried up after the trees which covered the mountain had been felled. The loss of the spring was rightly ascribed to the cutting down of the timber. The mountain was therefore planted anew. A few years afterwards the spring reappeared by degrees, and by and by flowed with its former abundance.⁴

The adoption of treaties was ad hoc, sporadic and limited in scope. Bilateral fisheries conventions were adopted in the mid-nineteenth century to halt over-exploitation. Examples include a convention to conserve oysters by prohibiting fishing outside certain dates,⁵ and instruments to protect fisheries, usually in rivers or lakes or in or around territorial waters, from over-exploitation.⁶ The first whaling convention was adopted in 1931.⁷

Migratory birds also required international cooperation to ensure their conservation. In 1872, Switzerland proposed an international regulatory commission for the protection of birds. This led to consideration of the matter by the non-governmental International Ornithological Congress and the creation in 1884 of an International Ornithological Committee, which formulated a treaty proposal,⁸ and the adoption in 1902 of the Convention to Protect Birds Useful to Agriculture.⁹ The Convention relied upon regulatory techniques still used today, such as the grant of absolute protection to certain birds, a prohibition on their killing or the destruction or taking of their nests, eggs or breeding places, and the use of certain methods of capture or destruction. The 1902 Birds Convention allowed exceptions, such as scientific research and repopulation, which continue to be reflected in more modern instruments, such as the 1979 Berne Convention and the 1992 Biodiversity Convention. In 1916, the first bilateral treaty for the protection of migratory birds was adopted.¹⁰ The founding in 1922 of the International Committee (later Council) for Bird Protection (later Preservation) (ICBP) reflected the recognition that substantive rules needed to be accompanied by new institutional arrangements. The ICBP was created to strengthen links between American and European bird protection groups, and its aim

³ A. Goudie, *The Human Impact: Man's Role in Environmental Change* (Oxford: Blackwell, 1981), 2; A. Goudie, *The Human Impact on the Natural Environment: Past, Present and Future* (Oxford: Blackwell, 2006, 6th edn).

⁴ J. B. Boussingault, *Rural Economy* (London: H. Bailliere, 1845, 2nd edn), cited in Goudie, *Human Impact*, 3.

⁵ Convention Between France and Great Britain Relative to Fisheries, Art. XI, Paris, 11 November 1867, 21 IPE 1.

⁶ North Sea Fisheries (Overfishing Convention), 1882, UN Doc. ST/LEG/SER.B/6, 1957, 695; Convention Concernant l'Exploitation et la Conservation des Pêcheries dans la Partie-Frontière du Danube, Belgrade, 15 January 1902. For other examples, see 9 IPE 4319–792.

⁷ Convention for the Regulation of Whaling, Geneva, 24 September 1931, 155 LNTS 351.

⁸ L. K. Caldwell, *International Environmental Policy* (Durham, NC/London: Duke University Press, 1990, 2nd edn), 32; L. K. Caldwell, *International Environmental Policy: From the Twentieth to the Twenty-First Century* (Durham, NC/London: Duke University Press, 1996, 3rd edn).

⁹ Paris, 19 March 1902.

¹⁰ Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, Washington, 7 December 1916, 4 IPE 1638.

of encouraging 'transnational co-ordination rather than international integration' reflected a reluctance to go too far in impinging upon the sovereignty of states.¹¹

The first treaty aimed at the protection of wildlife in a particular region was the 1900 Convention Destinée à Assurer la Conservation des Diverses Espèces Animales Vivant à l'Etat Sauvage en Afrique qui sont Utiles à l'Homme ou Inoffensive.¹² It sought to ensure the conservation of wildlife in the African colonies of European states, including the use of trade restrictions on the export of certain skins and furs,¹³ reflecting a desire to combine regulatory techniques with economic incentives.¹⁴ The 1900 Convention was replaced by the 1933 Convention on the Preservation of Fauna and Flora in their Natural State,¹⁵ which was itself superseded by a new instrument in 1968 following the attainment of independence by these former colonial territories of Africa.¹⁶ Like other early conventions, the 1933 Convention did not create any institutional arrangements for administering its provisions, monitoring compliance or ensuring implementation. During this first period, the only other region to adopt a treaty for the protection of wildlife was the Americas.¹⁷

It was not only fisheries and wildlife that attracted the attention of international legislators. The 1909 Water Boundaries Treaty between the United States and Canada was the first to commit its parties to preventing pollution,¹⁸ and under the auspices of its International Joint Commission a draft treaty on pollution prevention was drawn up in 1920, but not adopted. Another draft instrument prepared in this period, also not adopted, sought to prevent oil pollution of the seas.¹⁹ Treaties were adopted to limit the spread of phylloxera²⁰ and epizootic diseases,²¹ and to prevent damage from corrosive and poisonous substances.²² Developments relating to the creation of international environmental organisations were limited. The first international institution to address nature protection arose from the 1909 meeting of the International Congress for the Protection of Nature, in Paris, which proposed the creation of an international nature protection body.²³ In 1913, an Act of Foundation of a Consultative Committee for the International Protection of Nature was signed in Berne by seventeen countries, with the task of collecting, classifying and publishing information on the international protection of nature.²⁴ The outbreak of the First World War laid the Commission to rest. Rudimentary international organisations were created at this time to address locust infestation²⁵ and contagious animal diseases.²⁶

¹¹ C. McCormick, *Reclaiming Paradise* (Bloomington, IN: Indiana University Press, 1989), 23.

¹² London, 19 May 1900, 4 IPE 1607. ¹³ Art. II. ¹⁴ On trade and environmental law, see Chapter 18, pp. 843–99.

¹⁵ London, 8 November 1933, 172 LNTS 242. ¹⁶ See 1968 African Nature Convention; see Chapter 10, p. 438.

¹⁷ See 1940 Western Hemisphere Convention; see Chapter 10, pp. 441–2.

¹⁸ Washington, 11 January 1909, 11 IPE 5704.

¹⁹ Final Act and Draft Convention of the Preliminary Conference on Oil Pollution of Navigable Waters, Washington, June 1926, 19 IPE 9585; Draft Convention and Draft Final Act on Pollution of the Sea by Oil, 21–25 October 1935, 19 IPE 9597.

²⁰ International Phylloxera Convention, with a Final Protocol, Berne, 23 June 1882, 4 IPE 1571.

²¹ Convention Designed to Remove the Danger of Epizootic Diseases in the Territories of Austria-Hungary and Italy, Rome, 7 December 1887, 4 IPE 1586.

²² Convention Between the Riverine States of the Rhine Respecting Regulations Governing the Transport of Corrosive and Poisonous Substances, Mannheim, 11 May 1900, 25 IPE 214.

²³ McCormick, *Reclaiming Paradise*, 22. ²⁴ Berne, 19 November 1913, 4 IPE 1631.

²⁵ Convention Between France and Great Britain Relative to Fisheries, Art. XI, Paris, 11 November 1867, 21 IPE 1.

²⁶ International Agreement for the Creation of an International Office for Dealing with Contagious Diseases of Animals, Paris, 25 January 1924, 4 IPE 1646.

It is evident that many of the developments during this period were inspired by the efforts of private individuals, scientists and environmental organisations in Europe and the United States.²⁷ Lawyers were also active: in 1911, the Institut de Droit International, a private association of lawyers, adopted International Regulations Regarding the Use of International Watercourses for Purposes Other than Navigation. Although these were not binding, they declared that ‘neither [riparian] state may, on its own territory, utilise or allow the utilisation of the water in such a way as seriously to interfere with its utilisation by the other state or by individuals, corporations, etc. thereof’.²⁸

During this period, two environmental disputes were submitted to international arbitration. Both awards set forth principles that influenced subsequent developments and included regulatory provisions governing the conduct of future activities. In the *Pacific Fur Seal* arbitration, the dispute between the United States and Great Britain concerned the latter’s alleged over-exploitation of fur seals in areas beyond national jurisdiction.²⁹ The award rejected the argument that states had the right to regulate, unilaterally, natural resources outside their jurisdiction to ensure their conservation, and set forth provisions for the ‘proper protection and preservation’ of fur seals outside jurisdictional limits. The regulations reflected earlier treaty provisions,³⁰ and provided a basis for a convention prohibiting pelagic sealing in the North Pacific Ocean and the importation of sealskins.³¹ The episode provided early evidence of the potential for disputes over valuable natural resources lying beyond the national jurisdiction of any state, as well as evidence of the role international law might play in resolving disputes and establishing a framework for the conduct of activities.

The second arbitral award of this period is the better known. The *Trail Smelter* case arose out of a dispute between the United States and Canada over the emission of sulphur fumes from a smelter situated in Canada, which caused damage in the state of Washington.³² The Tribunal applied the principle that under international law ‘no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence’.³³ The award of the Tribunal and its finding on the state of international law on air pollution in the 1930s has come to represent a crystallising moment for international environmental law, which has influenced subsequent developments in a manner that undoubtedly exceeds its true value as an authoritative legal determination.

These two arbitral awards, together with the treaties and organisations that were brought into being, established early foundations. Institutional arrangements to address environmental matters were limited, and international rules were sparse in terms of both the subject matter they addressed and the regions they covered. However, there was a growing awareness that the exploitation of natural resources could not occur on an unlimited basis, that industrialisation

²⁷ McCormick, *Reclaiming Paradise*, 1–23. ²⁸ 20 April 1911, 11 IPE 5702.

²⁹ 1 *Moore’s International Arbitral Awards* (1893) 755; see Chapter 11, pp. 509–511.

³⁰ Agreement Between the Government of the United States of America and the Government of Her Britannic Majesty for a Modus Vivendi in Relation to Fur Seal Fisheries in the Bering Sea, Washington, 15 June 1891, 8 IPE 3655; Convention Between the Government of the United States of America and the Government of Her Britannic Majesty for the Renewal of the Existing Modus Vivendi in the Bering Sea, Washington, 18 April 1892, 4 IPE 3656.

³¹ Convention Between the United States of America, the United Kingdom of Great Britain and Northern Ireland, and Russia, for the Preservation and Protection of Fur Seals, Washington, 7 July 1911, 8 IPE 3682, Arts. I–III.

³² 3 RIAA 1905 (1941); see Chapter 7, p. 254. ³³ 35 *American Journal of International Law* 716 (1941); 9 ILR 317.

and technological developments brought with them pollution and associated problems, and that international measures were needed to address these matters.

FROM THE CREATION OF THE UNITED NATIONS TO STOCKHOLM: 1945–72

The second phase in the development of international environmental law began with the creation of the UN and its specialised agencies in 1945.³⁴ It was a period characterised by two features: international organisations at the regional and global level began to address environmental issues; and the range of environmental concerns addressed by international regulatory activity broadened to include a focus on the causes of pollution resulting from certain ultra-hazardous activities. A third feature was the limited recognition of the relationship between economic development and environmental protection.

Despite attempts by certain individuals to push conservation onto the international agenda following the Second World War, the UN Charter did not include provisions on environmental protection or the conservation of natural resources.³⁵ Nevertheless, the UN's purposes include the achievement of international cooperation in solving international problems of an economic, social, cultural or humanitarian character, and this has provided the basis for the subsequent environmental activities of the UN.³⁶ No environment or nature conservation body was established among the specialised agencies. However, the constituent instruments of the Food and Agriculture Organization (FAO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) included provisions with an environmental or conservationist aspect, and the instrument establishing the General Agreement on Tariffs and Trade (GATT) permitted certain measures relating to 'the conservation of exhaustible natural resources' as exceptions to the rules establishing free trade obligations.³⁷

In October 1948, governments and non-governmental actors established the first major international organisation to address environmental issues. A conference convened with the assistance of UNESCO, which was attended by representatives of eighteen governments, seven international organisations and 107 national organisations, established the International Union for the Protection of Nature (now the International Union for Conservation of Nature, or IUCN), to promote the preservation of wildlife and the natural environment, public knowledge, education, scientific research and legislation.³⁸ The IUCN is a unique organisation whose members are governments and non-governmental actors, and which has played an important role in developing treaties to protect wildlife and conserve natural resources.

UNCCUR

The seeds of intergovernmental environmental action were sown in 1947 by the UN, with the Economic and Social Council (ECOSOC) resolution convening the 1949 United Nations

³⁴ On the structure of the UN, see Chapter 3, pp. 59–61. ³⁵ For reasons, see McCormick, *Reclaiming Paradise*, 25–7.

³⁶ UN Charter, San Francisco, 26 June 1945, 1 UNTS xvi, Art. 1(3); see Chapter 3, pp. 59–61.

³⁷ See Chapter 18, p. 851.

³⁸ 1977 Statutes, 18 IPE 8960; on the creation of the IUCN, see McCormick, *Reclaiming Paradise*, 31–6. In 1956, the IUPN was renamed the International Union for the Conservation of Nature and Natural Resources (IUCN). See its website at: www.iucn.org

Conference on the Conservation and Utilisation of Resources (UNCCUR). The origins of this resolution have been traced to the initiative of Presidents Franklin D. Roosevelt and Harry S. Truman.³⁹ The resolution reflected an awareness of the need for international action to establish a balanced approach to the management and conservation of natural resources. The resolution emphasised the importance of the world's natural resources and their significance for the reconstruction of devastated areas; it also recognised the need for the 'continuous development and widespread application of the techniques of resource conservation and utilisation'.⁴⁰ The resolution determined the competence of the UN over environmental matters and ultimately resulted in the 1972 Stockholm Conference and the 1992 UNCED, as well as other UN action on the environment.

UNCCUR provided a modest start. It had a limited scope, having been convened to exchange information on 'techniques in this field, their economic costs and benefits, and their interrelations' and being devoted to the exchange of ideas and experience.⁴¹ It had no mandate to adopt any recommendations. Held from 17 August to 6 September 1949 in New York State, it was attended by over 1,000 individuals from more than fifty countries, some 500 having been selected by the UN Secretary General upon the nomination of governments, non-governmental organisations and the Preparatory Committee. UNCCUR addressed six issues: minerals; fuels and energy; water; forests; land; and wildlife and fish. The topics addressed included the interdependence, use and conservation of resources, and the integrated development of river basins.⁴² If UNCCUR's accomplishments were limited, the topics were similar to those addressed at UNCED nearly half a century later. Even at this early stage, the relationship between conservation and development was a central theme, with discussions focusing on the relationship between conservation and use, on the need to develop standards to ensure conservation and on the relationship between conservation and development.⁴³

Development of International Environmental Rules

Following the 1949 UNCCUR, environmental action by the UN and its specialised agencies addressed issues relating to the conservation of flora and fauna. In 1954, the General Assembly convened a major Conference on the Conservation of the Living Resources of the Sea,⁴⁴ which led to the conservation rules adopted in the 1958 Geneva Conventions. The major new development was the attention given by the General Assembly to atmospheric nuclear tests and oil pollution, a shift of emphasis away from the protection of flora and fauna and towards international action on industrial and military activity. In 1955, the General Assembly adopted the first of a number of resolutions on the use of atomic energy and the effects of atomic radiation,⁴⁵ which led to the adoption of the Test Ban Treaty in 1963.⁴⁶ This was the context for Australia and New Zealand to bring actions before the ICJ calling on France to stop all atmospheric nuclear tests.⁴⁷

³⁹ Caldwell, *International Environmental Policy*, 42. ⁴⁰ ECOSOC Res. 32 (IV) (1947), Preamble. ⁴¹ *Ibid.*

⁴² *Yearbook of the UN* (1948–9), 481–2. See also UNCCUR Proceedings, vol. 1: Plenary Meetings (E/Conf.7/7).

⁴³ *Ibid.* ⁴⁴ See UNGA Res. 900 (IX) (1954). The Conference Report is at 8 IPE 3696.

⁴⁵ See e.g. UNGA Res. 912 (X) (1955); Res. 913 (X) (1955); Res. 1147 (XII) (1957); Res. 1252 (XIII) (1958); Res. 1379 (XIV) (1959); Res. 1402 (XIV) (1959); Res. 1649 (XVI) (1961).

⁴⁶ See Chapter 7, pp. 255–6; and Chapter 12, p. 601.

⁴⁷ See Chapter 7, pp. 255–6 (and New Zealand's subsequent application in 1995, at Chapter 5, p. 155).

In 1954, under the auspices of the International Maritime Organization (IMO), the first global convention for the prevention of oil pollution was adopted (building on the text of the earlier drafts of 1926 and 1935),⁴⁸ to be followed fifteen years later by treaties permitting intervention to combat the effects of oil pollution,⁴⁹ establishing rules of civil liability for oil pollution damage,⁵⁰ and creating an oil pollution compensation fund.⁵¹ These were adopted in response to specific incidents resulting in large-scale oil pollution, which caused damage to the marine environment and to people and property. Other global conventions were the 1958 High Seas Fishing and Conservation Convention, which established innovative provisions on the conservation of marine living resources,⁵² and the 1958 Convention on the High Seas, which committed contracting parties to preventing oil pollution and the dumping of radioactive wastes.⁵³ The 1971 Ramsar Convention was the first environmental treaty to establish rules addressing the conservation of a particular type of ecosystem.⁵⁴

At this time, notable regional developments were occurring to prohibit or regulate activities previously beyond the scope of international law. The 1959 Antarctic Treaty committed parties to peaceful activities in that region, and prohibited nuclear explosions or the disposal of radioactive waste.⁵⁵ The United Nations Economic Commission for Europe (UNECE) promulgated harmonising regulations on emissions from motor vehicles,⁵⁶ and the Committee of Ministers of the Council of Europe adopted the first international act dealing with general aspects of air pollution.⁵⁷ In 1967, the then European Community (EC) adopted its first environmental act, on the packaging and labelling of dangerous goods, despite the absence of express environmental provisions in the 1957 Treaty of Rome.⁵⁸ In relation to wildlife conservation, the 1968 African Nature Convention went beyond the limited approach to conservation of fauna and flora by aiming at the 'conservation, utilisation and development of soil, water, flora and fauna resources in accordance with scientific principles and with due regard to the best interests of the people'.⁵⁹ In early 1972, shortly before the Stockholm Conference, the Oslo Dumping Convention became the first treaty to prohibit the dumping of a wide range of hazardous substances at sea.⁶⁰ During this period, treaties sought to protect the quality of rivers⁶¹ and, under the auspices of the International Labour Organization (ILO), the quality of the working environment.⁶²

Other developments were noteworthy. In 1949, the ICJ confirmed 'every state's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other states', a *dictum* that contributed to the emergence of Principle 21 of the Stockholm Declaration.⁶³ In 1957, in the *Lac Lanoux* arbitration, the Tribunal affirmed principles concerning limitations on the right of states in their use of shared rivers and informing the meaning of cooperation in international law.⁶⁴ Against this background loomed the broader issue of the relationship between environment

⁴⁸ 1954 International Convention for the Prevention of Pollution of the Sea by Oil, London, 12 May 1954, 327 UNTS 3.

⁴⁹ See Chapter 11, pp. 460–1. ⁵⁰ See Chapter 16, pp. 779–81. ⁵¹ See *ibid.*, pp. 781–3.

⁵² See Chapter 11, pp. 460–1. ⁵³ See *ibid.*, p. 460. ⁵⁴ See Chapter 10, pp. 420–2.

⁵⁵ See Chapter 13, pp. 634–5. ⁵⁶ See Chapter 7, p. 260. ⁵⁷ Resolution (66) 23 Air Pollution (1966), 15 IPE 7521.

⁵⁸ Chapter 12, p. 578. ⁵⁹ Chapter 10, p. 348. ⁶⁰ Chapter 11, p. 461.

⁶¹ Protocol Concerning the Constitution of an International Commission for the Protection of the Mosel Against Pollution, Paris, 20 December 1961, 940 UNTS 211; Agreement Concerning the International Commission for the Protection of the Rhine Against Pollution, Berne, 29 April 1963, 914 UNTS 3.

⁶² Chapter 3, p. 76; and Chapter 12, p. 590ff. ⁶³ (1949) ICJ Reports 4. ⁶⁴ Chapter 9, pp. 341–2.

and development, first identified by the 1949 UNCCUR; in 1962, the General Assembly adopted a resolution on the relationship between economic development and environmental protection.⁶⁵

By 1972, there was, therefore, an emerging body of international environmental rules at the regional and global levels, and international organisations were addressing international environmental issues. Limitations on the right of states to treat their natural resources as they wished were being established. Nevertheless, these treaty and institutional developments were developing in a piecemeal fashion, and the lack of coordination hampered efforts to develop a coherent international environmental strategy. Moreover, no international organisation had overall responsibility for coordinating international environmental policy and law, and few had a specific environmental mandate. International procedures for ensuring the implementation of, and compliance with, international environmental standards were virtually non-existent. The regulatory techniques available for addressing a growing range of issues were limited, and no rules had yet been developed on procedural obligations, such as environmental impact assessment or the dissemination of and access to environmental information. The 1972 Stockholm Conference must be seen in this context.

The 1972 United Nations Conference on the Human Environment

The origins of the 1972 Stockholm Conference can be traced to an Intergovernmental Conference convened by UNESCO in 1968 (the 1968 Biosphere Conference).⁶⁶ The Conference considered the impact of human activities on the biosphere, including the effects of air and water pollution, over-grazing, deforestation and the drainage of wetlands, and adopted twenty recommendations reflecting themes adopted at the 1972 Stockholm Conference.⁶⁷ The scale of the task facing the international community was reflected in the final report of the 1968 Biosphere Conference:

Until this point in history the nations of the world have lacked considered, comprehensive policies for managing the environment. Although changes have been taking place for a long time, they seem to have reached a threshold recently that has made the public aware of them. This awareness is leading to concern, to the recognition that to a large degree, man now has the capability and the responsibility to determine and guide the future of his environment, and to the beginnings of national and international corrective action . . . It has become clear, however, that earnest and bold departures from the past will have to be taken nationally and internationally if significant progress is to be made.⁶⁸

The Stockholm Conference was convened in December 1968 by the United Nations General Assembly.⁶⁹ This followed the adoption in July 1968 of a resolution, first proposed by Sweden, noting ‘the continuing and accelerating impairment of the quality of the human environment’, and recommending that the General Assembly consider the desirability of convening a UN

⁶⁵ UNGA Res. 1831 (XVII) (1962).

⁶⁶ *Report of the UN Conference on the Human Environment*, Stockholm, 5–16 June 1972, UN Doc. A/CONF.48/14/Rev.1.

⁶⁷ See *Yearbook of the UN* (1968), 958; UNESCO, *Use and Conservation of the Biosphere: Proceedings of the Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere* (1970); McCormick, *Reclaiming Paradise*, 88–90.

⁶⁸ Cited in Caldwell, *International Environmental Policy*, 45. ⁶⁹ UNGA Res. 2398 (XXIII) (1968).

conference.⁷⁰ The Conference was held in Stockholm on 5–16 June 1972, under the chairmanship of Maurice Strong, a Canadian, and was attended by 114 states and a large number of international institutions and non-governmental observers. The Conference adopted three non-binding instruments: a resolution on institutional and financial arrangements, a Declaration containing twenty-six Principles, and an Action Plan containing 109 Recommendations.⁷¹

The Conference did not adopt any binding obligations, and formal decisions had to await the twenty-seventh session of the UN General Assembly the following autumn. The Conference was generally considered to have been successful, largely because the preparatory process had allowed agreement to be reached on most issues prior to the Conference.⁷² According to one commentator, 'Stockholm enlarged and facilitated means toward international action previously limited by inadequate perception of environmental issues and by restrictive concepts of national sovereignty ... There were significant elements of innovation in (1) the redefinition of international issues, (2) the rationale for co-operation, (3) the approach to international responsibility, and (4) the conceptualisation of international organisational relationships.'⁷³ Although the infusion of new international law was not dramatic, trends under way before Stockholm relating to marine pollution, transboundary air and water pollution, and the protection of endangered species were reinforced by the Stockholm resolutions.⁷⁴ From a legal perspective, the significant developments were the recommendations for the creation of new institutions and the establishment of coordinating mechanisms among existing institutions (the Action Plan), the definition of a framework for future actions to be taken by the international community (the Recommendations), and the adoption of a set of general guiding principles (the Principles).

The recommendation on institutional and financial arrangements proposed that action be taken by the UN General Assembly to establish four institutional arrangements: an intergovernmental Governing Council for Environmental Programmes to provide policy guidance for the direction and co-ordination of environmental programmes; an Environment Secretariat headed by an Executive Director; an Environment Fund to provide financing for environmental programmes; and an interagency Environmental Co-ordinating Board to ensure cooperation and coordination among all bodies concerned in the implementation of environmental programmes in the United Nations system. The Action Plan comprised 109 recommendations. These were generally accepted by consensus, and reflected an agenda which identified six main subject areas:

- (1) planning and management of human settlements for environmental quality;
- (2) environmental aspects of natural resources management;
- (3) identification and control of pollutants and nuisances of broad international significance;
- (4) educational, informational, social and cultural aspects of environmental issues;
- (5) development and environment; and
- (6) international organisational implications of action proposals.⁷⁵

⁷⁰ ECOSOC Res. 1346 (XLV) (1968). Two months earlier, ECOSOC had taken note of a report by the World Health Organization (WHO) on environmental pollution and its control, and a report by UNESCO and FAO on the conservation and rational utilisation of the environment: ECOSOC Res. 1310 (XLIV) (1968).

⁷¹ *Report of the UN Conference on the Human Environment*, UN Doc. A/CONF.48/14 at 2–65, and Corr.1 (1972), 11 ILM 1416 (1972). For an excellent account of the Conference and the Declaration, see L. B. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 (1973).

⁷² Sohn, 'Stockholm Declaration', 424. ⁷³ Caldwell, *International Environmental Policy*, 55 and 60. ⁷⁴ *Ibid.*, 60. ⁷⁵ *Ibid.*, 61.

The Action Plan included proposals on environmental assessment (by the establishment of Earthwatch, which was to include a Global Environmental Monitoring System (GEMS) and an International Referral System (subsequently INFOTERRA)); on natural resources management; and on supporting measures related to training and education and the provision of information. Consensus was virtually complete, although some reservations were made. The United States would not accept the principle of additionality, according to which an increase in its foreign aid budget would be required to cover costs imposed by environmental protection measures on development projects (Recommendation 109),⁷⁶ and Japan refused to observe the recommendation calling for a ten-year moratorium on commercial whaling (Recommendation 33).⁷⁷

The Declaration of Principles for the Preservation and Enhancement of the Human Environment was based on a draft Declaration prepared by the Preparatory Committee. It was intended to provide 'a common outlook and . . . common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment'.⁷⁸ The twenty-six Principles reflected a compromise between those states which believed it should stimulate public awareness of, and concern for, environmental issues, and those states which wanted the Declaration to provide specific guidelines for future governmental and intergovernmental action.

From a legal perspective, the most relevant provisions are Principles 24, 21, 22 and 23. Principle 24 called for international cooperation 'to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all states'. Principle 21 affirmed the responsibility of states to ensure that activities within their jurisdiction or control do not cause damage in another state or beyond national jurisdiction, such as in outer space or on the high seas. This responsibility is said to extend also to activities under a state's 'control', such as those carried out by its nationals or by or on ships or aircraft registered in its territory.⁷⁹

Principle 22 required states to cooperate in developing international environmental law. This is a substantially weakened version of an earlier proposal, which would have required states to pay compensation for all environmental damage caused by activities carried on within their territory. The earlier proposal failed because of concerns that it implied acceptance of a no-fault or 'strict' standard of liability for environmental harm. Certain states made clear their view that liability to pay compensation would only exist where there had been negligence attributable to the state concerned.⁸⁰ Principle 23 foresaw a limited role for international regulation and suggested that certain standards would 'have to be determined nationally' on the basis of the value systems applying in each country and their social costs, and in accordance with the need for different environmental standards in different countries. The Stockholm Principles are weak on techniques for implementing environmental standards, such as environmental impact assessment, access to environmental information and the availability of administrative and judicial remedies. Principle 24 simply calls for international organisations to play a coordinated, efficient and dynamic role.

The other Stockholm Principles were couched in non-legal language. Principle 1 linked environmental protection to human rights norms, stating that man has 'the fundamental right

⁷⁶ This principle was, in effect, accepted at UNCED in 1992 and in the Climate Change and Biodiversity Conventions.

⁷⁷ Caldwell, *International Environmental Policy*, 62. ⁷⁸ UN Doc. A/CONF.48/PC.17.

⁷⁹ For the background to Principle 21 and its subsequent development, see Chapter 6, pp. 201ff.

⁸⁰ UN Doc. A/CONF.48/PC.12, Annex 1, at 15 (1971).

to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations'.⁸¹ Other Principles can be grouped into themes. Principles 2, 3 and 5 set forth general guidelines for the natural resources of the Earth to be safeguarded for the benefit of present and future generations, and for the maintenance, restoration and improvement of vital renewable resources and the non-exhaustion of non-renewable resources. Principles 4, 6 and 7 identified specific environmental threats, recalling the special responsibility of man to safeguard and wisely manage the heritage of wildlife and habitat, halt the discharge of toxic and other substances and heat which cause serious or irreversible damage to the ecosystem, and prevent pollution of the seas or harm to living resources and marine life. Principles 8–15 addressed issues which reflected the relationship between development and the environment: they recognised the relationship between economic and social development and environmental quality; they called for 'accelerated development' through the transfer of financial and technological assistance and stable and adequate prices for commodities and raw materials; and they supported an integrated and coordinated approach to rational development planning which is compatible with protecting and improving the human environment. Principles 16–20 recognised the need for appropriate demographic policies; supported the development of national institutions to manage environmental resources; called for the application of science and technology; and encouraged education and scientific research and development.⁸²

The draft Declaration prepared by the Preparatory Committee had included a further important legal principle, originally entitled 'Principle 20', which would have provided that:

relevant information must be supplied by states on activities or developments within their jurisdiction or under their control whenever they believe, or have reason to believe, that such information is needed to avoid the risk of significant adverse effects on the environment in areas beyond their national jurisdiction.⁸³

This Principle was not agreed at the Conference, following the objections of a number of developing states, which maintained that the obligation to consult might be abused by developed states to impede development projects. As will be seen, this requirement is now recognised by the International Law Commission, and by many conventions, as a basic requirement.

Stockholm Follow-up

The Report of the Stockholm Conference was considered by the UN General Assembly at its twenty-seventh session, which adopted eleven resolutions. Resolution 2994 (XXVII) noted with satisfaction the Conference Report.⁸⁴ Resolution 2995 (XXVII) was a partial revival of the Preparatory Committee's original 'Principle 20', providing that technical information on proposed works should be supplied to other states where there is a risk of significant transboundary

⁸¹ See Chapter 17, pp. 813ff.

⁸² When the Stockholm Declaration was adopted, fewer than six states had national authorities specifically responsible for the environment. Today, few states do not have such a body.

⁸³ UN Doc. A/CONF.48/4, Annex, para. 20, at 4 (1972). ⁸⁴ *Yearbook of the UN* (1972), 330.

environmental harm, but that this information should be received in good faith and not used to delay or impede development of natural resources.⁸⁵ Resolution 2996 (XXVII) affirmed that Resolution 2995 was not to be construed as limiting Principles 21 and 22 of the Stockholm Declaration,⁸⁶ and Resolutions 2997 to 3004 addressed institutional and financial arrangements for international environmental cooperation, including the creation of the United Nations Environment Programme.⁸⁷

FROM STOCKHOLM TO RIO: 1972–92

The Stockholm Conference set the scene for international activities at the regional and global level, and influenced legal and institutional developments up to and beyond UNCED. Developments in this period were of two types: those directly related to Stockholm and follow-up actions; and those indirectly related thereto. The period was marked by: a proliferation of international environmental organisations (including those established by treaty) and greater efforts by existing institutions to address environmental issues; the development of new sources of international environmental obligations from acts of such organisations; new environmental norms established by treaty; the development of new techniques for implementing environmental standards, including environmental impact assessment and access to information; and the formal integration of environment and development, particularly in relation to international trade and development assistance.

Post-Stockholm: Treaties and Other International Acts

The creation of the United Nations Environment Programme (UNEP) and the adoption of Principle 21 were the most significant achievements of the Stockholm Conference. UNEP has been responsible for the establishment and implementation of the Regional Seas Programme, including over thirty regional treaties,⁸⁸ as well as important global treaties addressing ozone depletion, trade in hazardous waste and biodiversity.⁸⁹ In the period immediately after Stockholm, several other treaties of potentially global application were adopted, outside UNEP but within the UN system, to address the dumping of waste at sea,⁹⁰ pollution from ships,⁹¹ the trade in endangered species⁹² and the protection of world cultural heritage.⁹³ The most important, viewed over time, is likely to be the United Nations Convention on the Law of the Sea (UNCLOS), which established a comprehensive framework for the establishment of global rules on the protection of the marine environment and marine living resources, including detailed and important institutional arrangements and provisions on environmental assessment, technology transfer, liability and dispute settlement.⁹⁴ Many of the techniques subsequently adopted in other environmental treaties may be traced directly to UNCLOS.

⁸⁵ *Ibid.*, 330–1. ⁸⁶ *Ibid.*, 331. ⁸⁷ *Ibid.*, 331–7. On UNEP, see Chapter 3, pp. 63–5. ⁸⁸ Chapter 11, pp. 465–72.

⁸⁹ Chapter 3, pp. 63–5.

⁹⁰ London Convention, Washington, 29 December 1972, 11 ILM 1294; see Chapter 11, pp. 479ff.

⁹¹ MARPOL 73/78, London, 11 February 1973, 11 ILM 1294; see Chapter 11, pp. 486ff.

⁹² Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 3 March 1973, 993 UNTS 243; see Chapter 10, pp. 409–17.

⁹³ 1972 World Heritage Convention; see Chapter 10, pp. 422–4.

⁹⁴ See Chapter 5, pp. 150–1; Chapter 14, pp. 664–7; and Chapter 16, pp. 764–7.

The Stockholm Conference was followed by important regional developments, including the adoption of EU environmental protection rules, and the creation of an Environment Committee at the OECD.⁹⁵ Other notable regional developments included: multilateral treaties dedicated to the protection of all migratory species;⁹⁶ the protection of habitats;⁹⁷ the prevention of trans-boundary air pollution;⁹⁸ the regulation and prohibition of commercial mineral activities in the Antarctic,⁹⁹ and rules on environmental cooperation and behaviour in a compact on development assistance between developed and developing countries.¹⁰⁰

Towards the end of this period, UN economic and financial organisations began to be faced with the practical implications which national and international environmental law might have for their respective activities. In 1971, the General Agreement on Tariffs and Trade (GATT) established a Group on Environmental Measures and International Trade (which did not meet until 1991), and as an organisation found itself increasingly faced with environmental issues, including the question of the circumstances in which unilateral trade restrictions adopted in the name of environmental protection could be justified under GATT rules.¹⁰¹ In the face of increasing public and governmental pressure, the World Bank and the regional development banks were called upon to integrate environmental considerations into their loan-making processes. This led to the establishment of an Environment Department in the World Bank and the adoption of limited environmental impact assessment requirements by most multilateral development banks.¹⁰² Among the most significant reflection of the changing times was the integration of environmental obligations into the 1990 Articles establishing the European Bank for Reconstruction and Development.¹⁰³ In 1991, the World Bank, UNEP and the United Nations Development Programme established the Global Environmental Facility to provide financial resources to support projects that benefited the global commons. At the same time, the GATT decided to reactivate its long-dormant Group on Environmental Measures and International Trade.

Prior to UNCED, treaties were adopted in areas not previously subject to international regulation. Under the auspices of the UNECE, treaties addressed environmental impact assessment,¹⁰⁴ the transboundary impacts of industrial accidents,¹⁰⁵ and the protection and use of international watercourses.¹⁰⁶ The International Law Commission completed a first reading of its draft Articles on the law of non-navigational uses of international watercourses, while the UN Security Council declared that ecological issues could constitute threats to international peace and security. The UN General Assembly adopted a resolution prohibiting the use of driftnets, the first time that body had adopted a normative rule seeking to establish a worldwide standard.

⁹⁵ Chapter 3, pp. 82–4. ⁹⁶ 1979 Bonn Convention; see Chapter 10, pp. 417–19.

⁹⁷ 1979 Berne Convention; see Chapter 10, pp. 444–6.

⁹⁸ 1979 LRTAP Convention and Protocols; see Chapter 7, pp. 261ff.

⁹⁹ 1988 CRAMRA and 1991 Environmental Protocol to the 1959 Antarctic Treaty; see Chapter 13.

¹⁰⁰ 1989 Lomé Convention (now the Cotonou Agreement, 23 June 2000). ¹⁰¹ Chapter 18, pp. 843–99.

¹⁰² Chapter 14, pp. 675–6.

¹⁰³ The EBRD was the first multilateral development bank to include in its constitution a specific commitment to environmental protection. The EBRD is required to 'promote in the full range of its activities environmentally sound and sustainable development'. See 23 ILM 1083 (1990), Art. 2(1)(vii). (www.ebrd.org); P. Sands, 'Present at the Creation: A New Development Bank for Europe in the Age of Environment Awareness', 84 *Proceedings of the American Society of International Law* 77 at 88–91 (1990).

¹⁰⁴ 1991 Espoo Convention; see Chapter 14, pp. 667–70.

¹⁰⁵ 1992 Industrial Accidents Convention; see Chapter 12, pp. 576–8.

¹⁰⁶ 1992 Watercourses Convention; see Chapter 9, pp. 361–3.

This was also the period in which the impact of acts of international organisations began to be felt. Many organisations had the power to adopt binding or non-binding decisions, resolutions, recommendations or other acts, and these organisations served as fora in which new international environmental legislation could be proposed, adopted and implemented. There are several examples of such acts that are noteworthy for their consequences on industrial and other economic activity, but three in particular reflect the scale of the changes that had occurred. These were: the moratorium on commercial whaling adopted by resolution of the International Whaling Commission in 1982;¹⁰⁷ the 1983 moratorium on the dumping of radioactive wastes adopted by resolution of the Consultative Meeting of the Parties to the 1972 London Convention;¹⁰⁸ and the decision by the 1989 Conference of the Parties to the 1973 CITES which placed African elephant ivory on Appendix 1 to the Convention and banned the international trade in ivory.¹⁰⁹ Each of these acts followed public pressure and politico-legal strategies adopted at the national and international levels over several years. Despite strong efforts to reverse these acts, they were still effective at the time of UNCED in 1992, although their economic impact, and their effect on the activities of indigenous peoples, focused attention on the broader economic and social implications of adopting international environmental regulations.

Several non-binding instruments were adopted under the auspices of intergovernmental and non-governmental organisations. Three such instruments have played an influential role: the 1978 UNEP draft Principles, the 1981 Montevideo Programme and the 1982 World Charter for Nature. Non-governmental efforts lay behind two other initiatives whose impact has been substantial: the collaboration between IUCN, UNEP and the Worldwide Fund for Nature (WWF) which led to the 1980 World Conservation Strategy; and the 1991 document entitled 'Caring for the Earth: A Strategy for Sustainable Living'.

1978 UNEP Draft Principles

One of the first acts to be adopted by UNEP in the field of international law led to the 1978 draft 'Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilisation of Natural Resources Shared by Two or More States' (the UNEP draft Principles).¹¹⁰ The draft Principles resulted from the efforts of an Intergovernmental Working Group established by the UNEP Governing Council in 1976,¹¹¹ pursuant to a request by the UN General Assembly.¹¹² The Working Group agreed to limit the effort to the preparation of principles and guidelines that would not be taken as creating legally binding obligations. This is reflected in the Explanatory Note to the Principles, which states that 'the language used throughout does not seek to prejudice whether or to what extent the conduct envisaged in the principles is already prescribed by existing principles of general international law'. The UNEP draft Principles were annexed to the final report of the Working Group which was adopted by the UNEP Governing Council in May 1978 but never submitted to the General Assembly for its consideration.¹¹³

¹⁰⁷ Chapter 11, p. 536. ¹⁰⁸ Chapter 11, p. 615. ¹⁰⁹ Chapter 10, pp. 409–17.

¹¹⁰ 17 ILM 1097 (1978); A. O. Adede, 'Utilisation of Shared Natural Resources: Towards a Code of Conduct', 5 *Environmental Policy and Law* 66 at 67–8 (1979).

¹¹¹ UNEP Governing Council Decision 44 (III) (1975). ¹¹² UNGA Res. 3129 (XXVIII) (1973).

¹¹³ UNEP Governing Council Decision 6/14 (1978).

The UNEP draft Principles comprise fifteen Principles to govern the use of 'shared natural resources', a concept which is not defined but which is understood from the Report of the UNEP Executive Director to mean something other than the 'global commons'.¹¹⁴ The fifteen Principles include language presciently similar to some of the provisions that were endorsed by the whole of the international community, fourteen years later at UNCED. Principles 1 and 2 recognise the duty of states to cooperate to control, prevent, reduce and eliminate adverse environmental effects, and requires them, to that end, to endeavour to conclude bilateral or multilateral agreements to secure specific regulation of their conduct. Principle 21 of the Stockholm Declaration, broadly followed by Principles 3 and 4, introduces a requirement that states 'make environmental assessments' before engaging in certain activities. Principles 5 and 6 relate to information exchange, consultation and notification, which are elements of the principle of good faith and good neighbourliness elaborated by Principle 7. The draft Principles include principles on scientific studies and assessments (Principle 8), emergency action (Principle 9) and the use of the 'services' of international organisations (Principle 10). Settlement of disputes, responsibility and liability are addressed by Principles 12 and 13, and Principles 13 and 14 elaborate upon the objectives of non-discrimination and the rights of persons in other jurisdictions who may be adversely affected by environmental damage to the equal right of access to administrative and judicial proceedings. Principle 15 provides that the UNEP draft Principles should be interpreted and applied 'to enhance and not to affect adversely development and the interests of all countries, and in particular the developing countries'.

1981 Montevideo Programme

Three years later, an ad hoc meeting of senior government officials with expertise in environmental law was held in Montevideo under UNEP auspices, and the Programme for the Development and Periodic Review of Environmental Law (the Montevideo Programme) was prepared.¹¹⁵ The original Montevideo Programme was divided into three parts. The first part proposed that guidelines, principles or agreements should be developed to address: marine pollution from land-based sources; protection of the stratospheric ozone layer; and the transport, handling and disposal of toxic and dangerous wastes. The second part proposed that action should be taken to address eight priority subject areas, and the third programme area proposed work of a general nature to promote the development of environmental law, including research, writing and teaching of theoretical and practical aspects of environmental law and the dissemination of information.

The Programme was adopted by the UNEP Governing Council in May 1982 and influenced UNEP's legal activities in the period 1982–92, resulting in the development of regional and global treaties and 'soft law' instruments.¹¹⁶ The Montevideo Programme has also been

¹¹⁴ Cooperation in the Field of the Environment Concerning National Resources Shared by Two or More States, Report of the Executive Director, UNEP/GC/44, 20 February 1975, which cites five illustrative examples: (1) an international water system, including both surface and ground water; (2) an air-shed or air mass above the territories of a limited number of states; (3) enclosed or semi-enclosed seas and adjacent coastal waters; (4) migratory species which move between the waters or territories of several states; and (5) a special ecosystem spanning the frontiers between two or more states, such as a series of mountains, forests or areas of special nature conservation (*ibid.*, 40–1).

¹¹⁵ Report, UNEP/GC.10/5/Add.2, Annex, Chapter II (1981); 8 *Environmental Policy and Law* 31 (1982).

¹¹⁶ Governing Council Decision 10/21, 31 May 1982. On UNEP-sponsored legal developments, see Chapter 3, pp. 63–5.

integrated into the UN System-Wide Medium-Term Environment Programmes (1984–9 and 1990–5). In 1993, 2001 and again in 2009, the UNEP Governing Council adopted new Programmes.¹¹⁷ UNEP is currently reviewing Montevideo VI, the programme iteration which applies from 2010 to 2019. Following a mid-term review report submitted to the second UN Environment Assembly in May 2016, the Assembly directed UNEP to prepare (i) an assessment of the implementation, effectiveness and impact of the fourth Montevideo Programme for the Development and Periodic Review of Environmental Law, and (ii) proposals for its work in the area of environmental law for a specific period beginning in 2020.¹¹⁸ The Assembly emphasised the need for activities in the field of environmental legal development to contribute to achieving the new Sustainable Development Goals and their targets (discussed further below).¹¹⁹

1982 World Charter for Nature

Ten years after the Stockholm Conference, the UN General Assembly adopted the World Charter for Nature, which set forth ‘principles of conservation by which all human conduct affecting nature is to be guided and judged’.¹²⁰ The Charter, which is divided into three sections, is a non-binding instrument drafted in general language. The Charter is an avowedly ecological instrument, which emphasises the protection of nature as an end in itself. The explanation for this lies in part in its origins – the Twelfth General Assembly of the IUCN held in Zaire in 1975 – and in its subsequent elaboration by IUCN and an international group of independent experts. Although not binding, the Charter has been characterised as ‘an important symbolic expression of an intent among nations to achieve a more harmonious and sustainable relationship between humanity and the rest of the biosphere – between mankind and earth’.¹²¹ As a standard of ethical conduct, however, many of its provisions are now reflected in treaties.

Section I sets out ‘General Principles’ calling for the respect of nature and its essential processes: safeguarding habitats and ensuring the survival of all life forms; providing special protection for unique areas, ecosystems and habitats of endangered species; maintaining ‘optimum sustainable productivity’ of natural resources without endangering other ecosystems or species; and securing nature against degradation from warfare.¹²² Section II, entitled ‘Functions’, is more operational in character. It calls for the integration of nature into the planning and implementation of development activities, taking into account the long-term capacity of natural systems and the physical constraints, biological productivity and diversity and natural beauty of different areas.¹²³ Living resources should not be used in excess of their natural capacity for regeneration; the productivity of soils should be maintained; resources should be reused or recycled, and non-renewable resources should be used with restraint.¹²⁴ The Charter includes language on environmental impact assessment¹²⁵ that is now broadly reflected in international practice, as well as the 2010 judgment of the ICJ in the *Pulp Mills* case and ITLOS in its 2011 *Advisory Opinion on Responsibilities and Obligations of States in the Area*.¹²⁶ Section III of the Charter addresses ‘Implementation’, including by education, environmental assessment, access

¹¹⁷ See p. 36. ¹¹⁸ UN Environment Assembly, Res. 19/2, para. 2(c). ¹¹⁹ *Ibid.*, preamble.

¹²⁰ UNGA Res. 37/7, 28 October 1982. The Charter was adopted by a vote of 111 in favour, eighteen abstentions and one vote against (United States); 23 ILM 455 (1983).

¹²¹ Caldwell, *International Environmental Policy*, 92. ¹²² UNGA Res. 37/7, paras. 1–5. ¹²³ *Ibid.*, paras. 7–9.

¹²⁴ *Ibid.*, para. 10. ¹²⁵ *Ibid.*, para. 11. ¹²⁶ See Chapter 14, pp. 679–80.

to information, financial resources, the establishment of standards for products and manufacturing processes, implementation of applicable international legal provisions, and measures to ensure that activities do not cause damage to natural systems within other states or in areas beyond the limits of national jurisdiction.¹²⁷

1980 World Conservation Strategy/1991 'Caring for the Earth' Strategy

The 1980 World Conservation Strategy was prepared by IUCN, UNEP, WWF, UNESCO and FAO. The Strategy gave currency to the term 'sustainable development', and led to the preparation of national and subnational conservation strategies in most states. It has subsequently influenced international legal developments. The 1980 Strategy emphasised three key objectives (maintaining ecological processes, preserving genetic diversity and sustainable use of species and ecosystems) and identified obstacles to the fulfilment of these objectives.¹²⁸

The 1991 Strategy restated the thinking about conservation and development with two aims: securing a commitment to sustainable living; and translating its principles into practice.¹²⁹ The Strategy called for the development of international law by strengthening existing international agreements, concluding new international agreements to achieve global sustainability, and preparing and adopting a Universal Declaration and Covenant on Sustainability.¹³⁰

The Brundtland Report and the Report of the Legal Experts Group

The World Commission on Environment and Development (WCED), chaired by Norwegian Prime Minister Gro Harlem Brundtland, was established in 1983 by the UN General Assembly, and its report (the Brundtland Report) was published in 1987.¹³¹ The Commission was established as an independent body and was an important catalyst for UNCED and the five instruments there adopted. The Brundtland Report signalled changes in the way we look at the world, endorsing an expanded role for sustainable development and a UN programme on sustainable development, and identifying key legal and institutional issues.¹³²

The Report made specific recommendations on a range of policy matters (population, food security, the loss of species and genetic resources, energy, industry and human settlements), recognising that these are connected and cannot be treated in isolation from each other. In addition, issues of international cooperation and institutional reform were addressed (the role of the international economy; managing the global commons; the relationship between peace, security, development and the environment; and institutional and legal change). The Brundtland Report identified six priority areas for legal and institutional change, and identified the existing legal order as part of the problem. First, national and international authorities were called on to support economically and ecologically sustainable development, to integrate the environment fully into their goals and activities, and to improve coordination and cooperation. Second, it sought a strengthened UNEP, as the principal source for environmental data, assessment and reporting and the principal advocate and agent for change and international cooperation. Third, it called for an extension of the capacity of the international community to

¹²⁷ UNGA Res. 37/7, para. 21. ¹²⁸ Caldwell, *International Environmental Policy*, 322–3.

¹²⁹ IUCN, UNEP and WWF, *Caring for the Earth: A Strategy for Sustainable Living* (1991). ¹³⁰ *Ibid.*, 79–81.

¹³¹ *Our Common Future*. ¹³² *Ibid.*, 4.

address irreversible environmental damage. Fourth, it recognised the need to expand the rights, roles and participation of an informed public, non-governmental organisations, the scientific community and industry.

Fifth, in recognising that ‘international law is being rapidly out-distanced by the accelerating pace and expanding scale of impacts on the ecological basis of development’, the Report called on governments to fill gaps in national and international law in order to find ways to recognise and protect the rights of present and future generations to an environment adequate for their health and well-being, to prepare under UN auspices a universal declaration on environmental protection and sustainable development and a subsequent convention, and to strengthen dispute settlement. Finally, the Report recognised the need to invest in pollution control by providing new financial assistance, and called for a UN Programme on Sustainable Development. Each of these proposals received support from governments at UNCED.

An Experts Group on Environmental Law was established alongside UNCED. It proposed Legal Principles and Recommendations on Environmental Protection and Sustainable Development (1986 WCED Legal Principles),¹³³ set out in twenty-two Articles reflecting basic obligations of states based on an assessment of treaties, soft law instruments, and some state practice. The WCED Legal Principles fell into three categories, including ‘general principles, rights and responsibilities’, and ‘principles, rights and obligations governing transboundary natural resources and environmental interference’.

Lead-up to UNCED

By 1990, preparations for UNCED were under way and significant political and legal changes were in place. There was now a discrete area of law called international environmental law. At the global and regional level, this included a large number of substantive rules limiting the rights of states to engage in activities that were harmful to the environment. International environmental law was no longer focused on the protection of wildlife. Standards had been adopted and applied for the protection of the marine environment and freshwater resources, the atmosphere and the ozone layer, and the disposal of hazardous and other wastes. New techniques for the implementation of those standards, such as environmental impact assessment and access to environmental information, were being developed and applied. Environmental protection was being addressed in the context of economic matters, such as trade and development lending. Developing countries had succeeded in establishing the principle that financial resources should be made available to help them meet the incremental costs of implementing their international environmental obligations. Differential standards were accepted in the 1985 SO₂ Protocol to the 1979 LRTAP Convention and the 1987 Montreal Protocol. New institutions had been created to address regional and global environmental issues, and existing institutions were beginning to integrate environmental considerations into their activities. Subsidiary bodies were being established to ensure innovative implementation and compliance techniques. Principle 21 was broadly considered to reflect a rule of customary international law, and new principles were emerging, such as the polluter pays principle and the precautionary principle. Perhaps most significantly, in respect of the standards being adopted, and in respect of monitoring and

¹³³ Reprinted in R. D. Munro and J. G. Lammers (eds.), *Environmental Protection and Sustainable Development* (London: Graham & Trotman, 1987), 7.

implementation, new international actors, including non-governmental organisations from developed and developing countries, were participating in the international legal process.

UNCED¹³⁴

In December 1987, the UN General Assembly noted the Brundtland Report, and the following year called for a UN conference on environment and development.¹³⁵ In December 1989, General Assembly Resolution 44/228 convened a UN Conference on Environment and Development for June 1992 in Rio de Janeiro, Brazil, to ‘elaborate strategies and measures to halt and reverse the effects of environmental degradation in the context of strengthened national and international efforts to promote sustainable and environmentally sound development in all countries’.¹³⁶

UNCED was held in Rio de Janeiro, Brazil, on 3–14 June 1992, and was attended by 176 states, more than fifty intergovernmental organisations, and several thousand corporations and non-governmental organisations. UNCED adopted three non-binding instruments: the Rio Declaration on Environment and Development (the Rio Declaration); a Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forest (the UNCED Forest Principles);¹³⁷ and Agenda 21. Two treaties were also opened for signature: the Convention on Biological Diversity;¹³⁸ and the UN Framework Convention on Climate Change.¹³⁹

UNCED was the culmination of three separate but related negotiating processes, one of which was the Preparatory Committee for UNCED (PrepComm) that met four times between August 1990 and May 1992. The other two were the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC) that held five sessions between February 1991 and May 1992, and the Intergovernmental Negotiating Committee for a Convention on Biological Diversity (INC/CBD) that held five sessions between June 1991 and May 1992. It was also, however, an opportunity to take stock of developments which had taken place in regional and global organisations, in public and private initiatives, and in bilateral, regional and global treaties. It provided an opportunity for the international community to translate initiatives such as the Brundtland Report and the Strategy for Sustainable Living, as well as the many regional preparatory conferences that had taken place, into a coherent strategy of international environmental policy and law for the twenty-first century. UNCED’s contribution to international law includes the Commission on Sustainable Development (replaced following the Rio+20 Summit by the High-Level Political Forum on Sustainable Development), the endorsement of a new topic area known as the ‘international law of sustainable development’ (of which international environmental law forms a significant part),¹⁴⁰ a number of the Rio Declaration Principles, and the framework established by Agenda 21. At the time of UNCED, it was suggested that its endorsement of sustainable development might undermine ‘the autonomy of environmental

¹³⁴ *Report of the UN Conference on Environment and Development*, Rio de Janeiro, 3–14 June 1992, UN Doc. A/CONF.151/26/Rev.1 (vols. I–III).

¹³⁵ UNGA Res. 42/187 (1987); UNGA Res. 43/196 (1988). See also UNEP Governing Council Decision 15/3 (1989); ECOSOC Res. 1989/87 (1989); Report of the Secretary General, UN Doc. A/44/256-E/1989/66 and Corr.1 and Add.1 and 2 (1989).

¹³⁶ UNGA Res. 44/228, para. 3. ¹³⁷ A/CONF.151/6/Rev.1, 13 June 1992. ¹³⁸ Chapter 10, pp. 388ff.

¹³⁹ Chapter 8, pp. 300–7. ¹⁴⁰ Rio Declaration, Principle 27. Agenda 21, paras. 39.1 and 39.2.

law as a body of rules and standards designed to restrain and prevent the environmentally destructive effects of certain kinds of economic activity', and there might be some reason to fear that the Rio Conference constituted 'the beginning of the decline of international environmental law as an autonomous branch of international law'.¹⁴¹ This has not occurred; international environmental law has continued to develop and expand since 1992. Nonetheless, UNCED's concern with the balance between environmental protection and economic development has necessitated a reorientation of international environmental regulation. Up until that time, environmental concerns had been marginal in the broader scheme of international legal and institutional arrangements. UNCED stressed that for environmental concerns to affect and influence behaviour in significant ways they must be integrated into economic and development activities. The challenge for international environmental law has been to facilitate this inter-linkage without environmental protection objectives being overwhelmed by the more powerful rules of international economic cooperation.

The Rio Declaration

The Rio Declaration represented a series of compromises between developed and developing countries and a balance between the objectives of environmental protection and economic development.¹⁴² The text was completed at the Fourth PrepComm in April 1992 and was not reopened for negotiation at UNCED, despite threats from a number of countries to do so. It was 'endorsed' by the UN General Assembly in December 1992.¹⁴³ The Declaration comprises twenty-seven Principles, which set out the basis upon which states and people are to cooperate and further develop 'international law in the field of sustainable development' (Principle 27). Although it is non-binding, some provisions reflect rules of customary law, others reflect emerging rules, and yet others provide guidance as to future legal developments. A number of the Principles – for example, in relation to precaution – have been frequently referred to by national and international courts. The Rio Declaration lost its original title ('Earth Charter'), mainly at the insistence of developing countries, and it bears little resemblance to the Universal Declaration of Human Rights, or to the Universal Covenant, which the Brundtland Report had called for.

Principle 1 of the Rio Declaration reflects a shift towards an anthropocentric approach to environmental and developmental issues, declaring that human beings are 'at the centre of concerns for sustainable development', and that they are 'entitled to a healthy and productive life in harmony with nature'; this falls short of recognising a right to a clean and healthy environment. The Rio Declaration reaffirmed Principle 21 of the Stockholm Declaration with one addition. As amended, Principle 2 provides that:

¹⁴¹ M. Pallemerts, 'International Environmental Law from Stockholm to Rio: Back to the Future?', 1 *Review of European Community and International Environmental Law* 254 at 264 (1992); D. Wirth, 'The Rio Declaration on Environment and Development: Two Steps Forward and One Step Back, or Vice Versa', 29 *Georgetown Law Review* 599 (1995).

¹⁴² 31 ILM 874 (1992). For an account of the negotiating history of the Rio Declaration, and an excellent interpretative guide, see I. Porras, 'The Rio Declaration: A New Basis for International Co-operation', 1 *Review of European Community and International Environmental Law* 245 (1992). For an assessment of the contribution of the Rio Declaration to modern international environmental law, see J. E. Viñuales (ed.), *The Rio Declaration on Environment and Development: A Commentary* (Oxford: Oxford University Press, 2015).

¹⁴³ UNGA Res. 47/190 (1992), para. 2.

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

The addition of the words ‘and developmental’ (not reflected in Article 3 of the Biodiversity Convention or Principle 2(a) of the Forest Principles), in the context of a negotiation of a document adopted by consensus by 176 states, arguably reflects an ‘instant’ change in the rule of customary international law which is widely considered to be set forth in Principle 21. It has been suggested that the addition of these two words reveals a ‘skillfully masked step backwards’ which by its stronger emphasis on development ‘upsets the delicate balance struck in Stockholm between the sovereign use of natural resources and the duty of care for the environment’.¹⁴⁴ In fact, a careful reading suggests that the additional words merely affirm that states are entitled to pursue their own development policies.

The heart of the Rio Declaration is in Principles 3 and 4, which should be read together to understand the political context and the trade-off they represent. Both Principles were initially controversial. Principle 3 provides that ‘[t]he right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations’. It represents something of a victory for developing countries and the Group of 77, being the first time that the ‘right to development’ was affirmed in an international instrument adopted by consensus.¹⁴⁵ In return for Principle 3, the developed countries extracted Principle 4, which provides that ‘[i]n order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it’. This reflects a commitment to moving environmental considerations and objectives from the periphery of international relations to its economic core. In practical terms, Principle 4 can be read as permitting, or requiring, the attachment of environmental conditions to all development lending by states and multilateral development banks, and the integration of environmental considerations into all economic and other development.

The Rio Declaration recognised a new principle of ‘common but differentiated responsibility’. Principle 7 notes the different contributions of countries to regional and global environmental degradation, and provides that:

[i]n view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.¹⁴⁶

¹⁴⁴ Pallemmaerts, ‘International Environmental Law’, 256.

¹⁴⁵ See the written statement by the United States, which ‘does not, by joining consensus . . . change its longstanding opposition to the so-called “right to development”’ (A/CONF.151/26/Rev.1 (vol. II), 17 (1992)).

¹⁴⁶ See Chapter 6, pp. 244–8.

This principle crystallised the provisions in earlier instruments that encouraged universal participation in agreements by providing incentives in the form of differentiated standards and 'grace periods', and the provision of financial incentives to subsidise at least some of the incremental costs incurred in fulfilling treaty obligations. The United States rejected an interpretation 'that would imply a recognition or acceptance by the United States of any international obligations or liabilities, or any diminutions in the responsibilities of developing countries'.¹⁴⁷

Principle 11 of the Rio Declaration commits all states to enact 'effective environmental legislation', although the standards, objectives and priorities 'should reflect the environmental and developmental context to which they apply'.¹⁴⁸ Principle 11 also recognises that standards applied by some countries 'may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries'.

The Rio Declaration developed general principles of the international law of sustainable development. The 'precautionary approach' is endorsed by Principle 15, and the polluter pays principle is implicitly recognised in Principle 16. The Rio Declaration took several steps beyond the Stockholm Declaration by supporting the development of 'procedural' techniques for implementing international standards (including access to information and public participation), the use of environmental impact assessments, and enhanced notification, information exchange and consultation.

Other matters addressed by the Rio Declaration included: the relationship between environmental protection and free trade obligations; the development of national and international law regarding liability and compensation for the victims of pollution and other environmental damage; the need to eradicate poverty and decrease disparities in standards of living; and the reduction and elimination of 'unsustainable patterns of production and consumption'. It promoted 'appropriate demographic policies', endogenous capacity-building and scientific understanding, as well as the transfer of technologies. The Rio Declaration supports the full participation of women, youth and indigenous people and their communities, recognises that war is 'inherently destructive of sustainable development', that peace, development and environmental protection are 'interdependent and indivisible', and that there is a need for the peaceful resolution of environmental disputes.

As a package, the Rio Declaration was more specific than the Stockholm Declaration. It provided a framework for the development of environmental law at the national and international level, which has served as an important point of reference to guide decision-making.

Agenda 21

Agenda 21 was adopted as a non-binding blueprint and action plan for a global partnership for sustainable development.¹⁴⁹ It was conceived as a plan of action by and for the whole of the international community, designed to integrate environment and development concerns for 'the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future'.¹⁵⁰ Agenda 21 comprises forty chapters and

¹⁴⁷ A/CONF.151/26/Rev.1 (vol. II), 18 (1993). ¹⁴⁸ Principle 11, 13 June 1992, 31 ILM 874 (1992).

¹⁴⁹ UNCED Report, A/CONF.151/26/Rev.1 (vol. I) (1993).

¹⁵⁰ Chapter 1, para. 1.1. UNGA Res. 47/190 (1992) called upon 'all concerned' to implement the commitments and recommendations without specifically endorsing Agenda 21.

hundreds of programme areas, the indicative cost of each having been estimated by the UNCED secretariat. The average annual cost of implementing the activities in Agenda 21 was estimated at \$600 billion USD in the period 1993–2000.

Agenda 21 was negotiated over two years, and ‘reflects a global consensus and political commitment at the highest level’ towards the implementation of national strategies, plans, policies and processes to be supported and supplemented by international cooperation.¹⁵¹ The implementation of Agenda 21 is the responsibility of governments, with key roles to be played by the UN system, other international, regional and subregional organisations, and with broad public participation and the active involvement of non-governmental organisations.¹⁵²

What contribution has Agenda 21 made to international law? It recommended the creation of a Commission on Sustainable Development, and new coordinating mechanisms among UN and other bodies. It proposed a Convention on Drought and Desertification (which was adopted in 1994), but could not agree on a possible international agreement on forests (which remains, more than two decades later, an unachieved goal). It proposed two intergovernmental follow-up conferences, on ‘straddling stocks’ of marine living resources (a convention was adopted in 1995) and on the sustainable development of small island states (the Third International Conference on Small Island Developing States was held in 2014). It endorsed a partnership role for all members of the international community (states, international organisations, non-state actors) in the development and implementation of law and policy on environment and development. And it established programme areas of variable quality and likely effect to cover virtually all human activity. Its contribution to international law can be considered at three levels. First, as a consensus document negotiated by the international community over a period of two years, it provides – even today – the only agreed global framework for the development and application of international legal instruments, including ‘soft law’ instruments, and the activities of international organisations. Second, limited parts of Agenda 21 might be considered to reflect rules of ‘instant’ customary law.¹⁵³ Third, it reflected a consensus on principles, practices and rules that might contribute to the development of new rules of conventional and customary law.

Agenda 21 comprises a Preamble (Chapter 1) and four sections. Section I (Chapters 2–8) addresses ‘Social and Economic Dimensions’. The seven chapters in this section provide for national and international action in relation to international cooperation, poverty, consumption patterns, population, human health, sustainable human settlement and the integration of environment and development in decision-making. Section II (Chapters 9–22) is concerned with ‘Conservation and Management of Resources for Development’. Its fourteen chapters address substantive issues for the protection and sustainable use of natural resources in various sectors, from the protection of the atmosphere to the management of hazardous wastes.

Section III (Chapters 23–32) provides for ‘Strengthening the Role of Major Groups’. The section recognises that ‘[o]ne of the fundamental prerequisites for the achievement of sustainable development is broad public participation in decision-making’, including new forms of

¹⁵¹ Chapter 1, para. 1.2. For the draft negotiating texts, see N. Robinson et al. (eds.), *The United Nations Conference on Environment and Development, Agenda 21 and the UNCED Proceedings* (New York/London: Oceana, 1992). Although it was adopted by consensus, written statements were submitted by the United States, Saudi Arabia, Argentina, Kuwait, Philippines, France and the delegation from Palestine (A/CONF.151/26/Rev.1 (vol. II), 18–22 (1993)).

¹⁵² *Ibid.*

¹⁵³ See e.g. the provision limiting the storage or disposal of radioactive waste near the sea (Agenda 21, para. 22.5(c)).

participation.¹⁵⁴ In a chapter devoted to each, it identifies key groups for the implementation of Agenda 21 and proposes their roles at the national and international levels: women; children and youth; indigenous people and their communities; non-governmental organisations; local authorities; workers and their trade unions; business and industry; the scientific and technological community; and farmers.¹⁵⁵ Finally, Section IV (Chapters 33–40) identifies ‘Means of Implementation’. The eight chapters in this section identify actions relating to financial resources and mechanisms (Chapter 33), technology transfer, cooperation and capacity-building (Chapter 34), science (Chapter 35), education, public awareness and training (Chapter 36), capacity-building in developing countries (Chapter 37), international institutional arrangements (Chapter 38), international legal instruments and mechanisms (Chapter 39) and information for decision-making (Chapter 40).

UNCED Follow-up

The UN General Assembly adopted five follow-up resolutions to UNCED. These: (1) established a negotiating committee to elaborate a convention on drought and desertification; (2) convened a global conference on the sustainable development of small island states; (3) noted the report of UNCED, endorsed the Rio Declaration and the Forest Principles and called for effective follow-up action and the implementation of all commitments, agreements and recommendations; (4) established new institutional arrangements to follow up UNCED, including the Commission on Sustainable Development; (5) and convened a conference on straddling and highly migratory fish stocks.¹⁵⁶

In the aftermath of UNCED, a number of important new instruments were adopted. A treaty was signed to replace the 1972 Oslo Dumping Convention and the 1974 Paris Convention on Prevention of Marine Pollution from Land-based Sources, incorporating many of the principles (precaution, polluter pays) and legal techniques (environmental impact assessment, access to information, economic instruments) endorsed at UNCED.¹⁵⁷ In 1995, a global Agreement on Straddling Fish Stocks was adopted by parties to the 1982 UNCLOS.¹⁵⁸ The parties to the 1969 CLC and the 1971 Fund Convention adopted 1992 Protocols that introduced significant legal changes;¹⁵⁹ and the Council of Europe adopted a convention on civil liability for environmental damage that incorporates many of the recommendations on procedural matters referred to in the Rio Declaration, including access to information and national legal remedies.¹⁶⁰ The Kyoto Protocol to the 1992 Climate Change Convention was adopted in 1997,¹⁶¹ and the Biosafety Protocol to the 1992 Biodiversity Convention was adopted in 2000:¹⁶² both instruments reflected new thinking in the approach to international regulation and the role of various actors, including the private sector. In 1998, under the auspices of the UNECE, states adopted the Aarhus Convention, the first treaty to address in a comprehensive fashion the rights of participation reflected in Principle 10 of the Rio Declaration.¹⁶³ In 2003, this innovative treaty was

¹⁵⁴ *Ibid.*, Preamble, paras. 23.1–23.2. ¹⁵⁵ *Ibid.*, Chapters 24–32.

¹⁵⁶ See respectively: UNGA Res. 47/188 (1992), and Chapter 11, pp. 433–4; UNGA Res. 47/189 (1992); UNGA Res. 47/190 (1992); UNGA Res. 47/191 (1992), and Chapter 3, pp. 56–7; and UNGA Res. 47/192 (1992), and Chapter 11, pp. 517–19.

¹⁵⁷ 1992 OSPAR Convention; see Chapter 11, pp. 472–4. ¹⁵⁸ Chapter 11, pp. 517–19.

¹⁵⁹ Chapter 16, pp. 780–2.

¹⁶⁰ 1993 Lugano Convention, not in force; see Chapter 16, pp. 799–801, noting Principle 13 of the Rio Declaration.

¹⁶¹ Chapter 8, pp. 307–15. ¹⁶² Chapter 10, pp. 397–403. ¹⁶³ Chapter 15, pp. 710–12.

further extended by a Protocol on Pollutant Release and Transfer Registers and has been amended to elaborate its provisions relating to public participation in decisions concerning the environmental release of genetically modified organisms.¹⁶⁴

BEYOND UNCED: TRENDS AND DIRECTIONS

UNCED stimulated negotiations for a number of new international environmental treaties, although there are clear signs that, in recent years, the rate of legislative activity has dropped off. Since UNCED, other treaties that have been adopted include an IAEA nuclear safety convention;¹⁶⁵ amendments and protocols to the 1960 and 1963 nuclear liability conventions;¹⁶⁶ a convention on desertification and drought under the auspices of the General Assembly;¹⁶⁷ an International Labour Organization convention on the prevention of industrial disasters;¹⁶⁸ revisions to the 1985 SO₂ Protocol to the 1979 LRTAP Convention and the adoption of Protocols concerning other matters;¹⁶⁹ a liability protocol to the 1989 Basel Convention and a supplementary liability protocol to the Biosafety Protocol;¹⁷⁰ global conventions on chemicals and pesticides and on persistent organic pollutants;¹⁷¹ a convention and protocol on liability for hazardous and noxious substances under the auspices of the International Maritime Organization;¹⁷² a protocol to the Convention on Biological Diversity concerning access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation;¹⁷³ a new global convention regulating emissions and releases of mercury;¹⁷⁴ and the 2015 Paris Agreement on climate change.¹⁷⁵ Important new treaties have also been adopted in relation to international watercourses, at the global, regional and bilateral levels,¹⁷⁶ in addition to new instruments addressing the protection of regional seas.¹⁷⁷

International organisations have continued to address a wide range of environmental issues. Developments have included: the maintenance by the International Whaling Commission of its moratorium on commercial whaling;¹⁷⁸ the maintenance of the prohibition on trade in African elephant ivory;¹⁷⁹ further adjustments and amendments to the Montreal Protocol bringing forward the phase-out of certain substances and adopting a non-compliance procedure which provides for sanctions;¹⁸⁰ the OSPAR Commission Decisions on reprocessing activities;¹⁸¹ the adoption of implementing rules and a non-compliance procedure under the Kyoto Protocol, and agreement on a second commitment period;¹⁸² and the initiation of new environmental policies by the World Bank, including a policy on broad access to information.¹⁸³ In the meantime, the International Law Commission has concluded its work on state responsibility, and on prevention of transboundary harm from hazardous activities,¹⁸⁴ and is currently engaged with topics relating to the protection of the environment in armed conflict, and the protection of the atmosphere.

¹⁶⁴ Chapter 15, pp. 710–15. ¹⁶⁵ Chapter 12, p. 595. ¹⁶⁶ Chapter 16, pp. 772–9. ¹⁶⁷ Chapter 10, pp. 433–4.

¹⁶⁸ Chapter 12, pp. 576–8. ¹⁶⁹ Chapter 7, pp. 261ff. ¹⁷⁰ Chapter 16, pp. 797–9. ¹⁷¹ Chapter 12, pp. 578ff.

¹⁷² Chapter 16, pp. 790–2. ¹⁷³ 2010 Nagoya Protocol, see Chapter 10, pp. 403–4.

¹⁷⁴ 2013 Minamata Convention on Mercury, see Chapter 7, pp. 276–7 and Chapter 12, pp. 606–8.

¹⁷⁵ Chapter 8, pp. 318–30. ¹⁷⁶ Chapter 9, pp. 360–80.

¹⁷⁷ Chapter 11, pp. 465–72. There are currently twelve UNEP Regional Seas Conventions with attendant protocols, as well as partner programmes, such as the 2003 Tehran Convention.

¹⁷⁸ *Ibid.*, pp. 533–6. ¹⁷⁹ Chapter 4, p. 116. ¹⁸⁰ Chapter 7, pp. 280–2; and Chapter 4, p. 115.

¹⁸¹ Chapter 11, p. 484. ¹⁸² Chapter 8, pp. 307–15; and Chapter 5, pp. 172–5. ¹⁸³ Chapter 15, p. 708.

¹⁸⁴ Chapter 16, pp. 769–70.

The period since UNCED has also been notable for the significant increase in international litigation on international environmental issues, reflecting a willingness on the part of states and other actors to bring international claims and a growing receptiveness on the part of the courts to give effect to environmental considerations. The International Court of Justice has addressed the environment in ten important cases, including the dispute between Hungary and Slovakia concerning the Gabčíkovo–Nagymaros project on the Danube River, the *Pulp Mills* case and the *Whaling* case.¹⁸⁵ Important decisions have been handed down by other international courts and tribunals, including WTO panels and the Appellate Body,¹⁸⁶ the International Tribunal for the Law of the Sea,¹⁸⁷ the Permanent Court of Arbitration,¹⁸⁸ the European Court of Human Rights and the Inter-American Court of Human Rights,¹⁸⁹ and numerous international arbitral tribunals, including in respect of the law of the sea.¹⁹⁰ As increased attention is given to compliance with environmental obligations, states have also established a large number of new non-compliance mechanisms.¹⁹¹ There is also considerable evidence that national courts are increasingly willing to apply international environmental obligations.¹⁹²

Useful indicators of future international legal developments are also reflected in the revisions to the Montevideo Programme, the fourth iteration of which (for 2010 to 2019) is currently under review.¹⁹³ In common with the third programme, the fourth revision includes parts on the effectiveness of environmental law (covering matters such as implementation, compliance and enforcement; capacity-building; prevention, mitigation and compensation of environmental damage; avoidance and settlement of international disputes; strengthening and further developing international environmental law; promoting appropriate harmonised approaches to the development and implementation of environmental law and promoting coordination between relevant institutions, including synergies in the implementation of related multilateral environmental agreements; public participation and access to information; information technology; improving the effectiveness of environmental law through the application of innovative approaches; and governance), and on the conservation, management and sustainable use of natural resources (including freshwater resources; aquatic living resources; soils; forests; biological diversity; and sustainable consumption and production patterns). The third part of the programme is entitled ‘Challenges for Environmental Law’. In addition to topics such as environmental emergencies and natural disasters, and pollution control, it canvasses several new issues that were not addressed in the third programme, including climate change, poverty, access to drinking water and sanitation, and holistic management and conservation of ecosystems. Part IV addresses the relationship between environmental issues and other fields, and focuses on four areas:

¹⁸⁵ See respectively Chapter 9, pp. 351–5 and Chapter 11, pp. 536–58, and Chapter 5, pp. 180–4. Other relevant cases decided by the ICJ post-UNCED include *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court’s Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France)* (1995) ICJ Reports 288; *Legality of the Threat or Use of Nuclear Weapons* (1996) ICJ Reports 226; *Fisheries Jurisdiction (Estai)* (*Spain v. Canada*) (1998) ICJ Reports 432; *Kasikili/Sedudu Island (Botswana/Namibia)* (1999) ICJ Reports 1045; *Navigational and Related Rights (Costa Rica v. Nicaragua)*, Judgment (2009) ICJ Reports 214; *Territorial and Maritime Dispute (Nicaragua v. Columbia)*, Judgment (2012) ICJ Reports 626; and *Maritime Dispute (Peru v. Chile)*, Judgment, General List No. 137, 27 January 2014.

¹⁸⁶ Discussed in Chapter 18, pp. 843–99. ¹⁸⁷ Discussed in Chapter 11, pp. 526–32.

¹⁸⁸ e.g. the *Chagos* Arbitration, discussed in Chapter 11, pp. 558–62. ¹⁸⁹ Discussed in Chapter 17, pp. 819–27.

¹⁹⁰ Discussed in Chapters 5 and 11, pp. 184–5 and pp. 526ff. ¹⁹¹ Chapter 5, pp. 172–5.

¹⁹² See generally M. Anderson and P. Galizzi, *International Environmental Law in National Courts* (London: British Institute of International and Comparative Law, 2002).

¹⁹³ UNEP/Env.Law/MTV4/IG/2/2 (22 October 2008).

- examining the utility of human rights-based approaches to environmental protection;
- securing environmental protection objectives in international trade, investment and financial laws and policies in order to achieve sustainable development;
- considering and exploring the linkages between environmental legislation and security; and
- reducing or mitigating the harmful effects of military activities on the environment and encouraging a positive role for the military sector in environmental protection.

Although these developments demonstrate the continuing attention of the international community to environmental issues, the ever-broadening scope of the field and its increasing integration with other areas of international law has brought with it some major challenges. Indicative of this, the results of follow-up conferences to UNCED – the World Summit on Sustainable Development in 2002 and the Rio+20 Summit in 2012 – have been lacklustre in comparison to the achievements of Stockholm and the original Rio conference. States have struggled to put flesh on the bones of the broad concept of sustainable development or to articulate concrete ways forward for reconciling environmental objectives with goals relating to development, poverty eradication and disaster management. That said, many hope that the 2015 Sustainable Development Goals – the most tangible outcome from the Rio+20 Summit – will lead to renewed focus on sustainable development and the steps needed for its achievement.

World Summit on Sustainable Development

To mark the tenth anniversary of UNCED, the World Summit on Sustainable Development (WSSD) was held in Johannesburg in September 2002.¹⁹⁴ The WSSD did not adopt any conventions or a statement of principles, and was generally focused on the eradication of poverty. The Johannesburg Declaration on Sustainable Development noted that the global environment continues to suffer, but proposed no specific actions beyond a general commitment to sustainable development.¹⁹⁵ The WSSD Plan of Implementation was long on general commitments and aspiration, but short on specific actions to be taken.¹⁹⁶ Such soft targets and timetables as were proposed were intended to build on post-UNCED achievements and expedite the realisation of UNCED's goals.

Rio+20 Summit

In June 2012, a twenty-year review conference of UNCED took place in Rio de Janeiro (the Rio+20 Summit). The Summit was convened by the UN General Assembly with the objective:

to secure renewed political commitment for sustainable development, assessing the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development and addressing new and emerging challenges.¹⁹⁷

¹⁹⁴ In 1997, a five-year review conference was held: see D. Osborn and T. Bigg, *Earth Summit II: Outcomes and Analysis* (London: Earthscan, 1998).

¹⁹⁵ Available at www.un-documents.net/jburgdec.htm

¹⁹⁶ Available at www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf

¹⁹⁷ UNGA Res. 64/236 (31 March 2010), para. 20(a).

The General Assembly tasked the conference with discussing two themes: (1) a green economy in the context of sustainable development and poverty eradication; and (2) the institutional framework for sustainable development,¹⁹⁸ and specified that the result of the conference should be 'a focused political document'.¹⁹⁹ The 'green economy' push was led by western nations and focused on creating jobs and profits through low-carbon, resource-saving businesses. Preparations for the Rio+20 Summit identified an additional seven areas needing priority attention: decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness.

The Rio+20 Summit was held over ten days, culminating in a three-day high-level UN conference organised by the UN Department of Economic and Social Affairs. It included participation from 192 UN Member States, including eighty-eight heads of state or heads of government, as well as thousands of representatives from private sector companies, NGOs and other groups. Unlike UNCED, the Rio+20 Summit produced no new agreements and no new commitments from states. The primary output from the Summit – a political outcome document entitled *The Future We Want* – spans nearly fifty pages but lacked specific commitments.

The weak outcomes from the Rio+20 Summit may well spell the end of major UN conferences on sustainable development attempting to articulate a comprehensive international legal framework for solving global environmental problems. Governments displayed little appetite for advancing the international sustainability agenda through agreement on concrete steps forward. By contrast, public and private stakeholders and civil society agreed on over 1,700 voluntary commitments and partnerships, with the aim of advancing various aspects of the sustainable development agenda and mobilising capital for this purpose.²⁰⁰

Post Rio+20 Follow-up: Institutional Reform and the Sustainable Development Goals

The Rio+20 Summit laid the institutional groundwork for more ambitious action to be taken in the future to advance sustainable development and the green economy if states have the requisite political will. Governments agreed, for example, to strengthen governance for sustainable development by establishing a new high-level political forum for sustainable development that replaces the Commission on Sustainable Development. They also declared their commitment to:

strengthening the role of the United Nations Environment Programme (UNEP) as the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment.²⁰¹

¹⁹⁸ *Ibid.* ¹⁹⁹ *Ibid.*, para. 20(b).

²⁰⁰ Details of the commitments and partnerships registered to date with the UN can be found at <https://sustainabledevelopment.un.org/index.php?menu=1348>

²⁰¹ UNGA Res. 66/288, *The Future We Want*, para. 88.

In addition to these institutional reforms, the Rio+20 Summit agreed to launch a process to develop Sustainable Development Goals (SDGs), building upon the earlier Millennium Development Goals and converging with the UN's post-2015 development agenda.²⁰²

In late September 2015, the UN General Assembly adopted seventeen SDGs and 169 associated targets for their achievement at the UN Sustainable Development Summit 2015, a high-level plenary meeting of the Assembly. These goals and targets make up Transforming our World: the 2030 Agenda for Sustainable Development.²⁰³ The seventeen SDGs encompass several goals with an explicit environmental protection focus, such as:

- Goal 6: ensuring availability and sustainable management of water and sanitation for all.
- Goal 13: taking urgent action to combat climate change and its impacts.²⁰⁴
- Goal 14: conserving and sustainably using the oceans, seas and marine resources for sustainable development; and
- Goal 15: protecting, restoring and promoting sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification, and halting and reversing land degradation and halting biodiversity loss.

The targets that underpin these broad goals are intended to focus associated implementation efforts. Many have ambitious time frames, such as halting deforestation and ending overfishing by 2020.²⁰⁵ Although several of the SDGs have a clear environmental focus, the majority of the goals target broader concerns such as human health, poverty eradication, food security, safe and sustainable cities, and access to sustainable energy and clean water. In sum, the SDGs indicate the extent to which – in the more than two decades since UNCED – international environmental law has evolved and become more widely integrated with the development agenda as a whole.

CONCLUSIONS

It is apparent that over the past several decades the rules of international law have become increasingly complex and technical, as environmental considerations are increasingly addressed in economic and other social fields, such as human rights and international trade, and integrated with broader development concerns, such as health and poverty eradication. In this regard, UNCED still stands as an important marker in the history of the development of international environmental law. Its follow-up conference, the 2012 Rio+20 Summit, reflected a declining political will to act as international environmental legal development increasingly intersects and is intertwined with the UN development agenda.

As it moves into this next phase, one feature that emerges is that international environmental law is no longer exclusively concerned with the adoption of normative standards to guide behaviour, but increasingly addresses techniques of implementation and mechanisms for compliance. Two consequences follow. First, the focus on implementation and compliance means that international environmental law will increasingly be concerned with procedural, constitutional

²⁰² Information on the UN Millennium Development Goals is available at www.un.org/millenniumgoals

²⁰³ UNGA Res. 69/L.85.

²⁰⁴ This goal is accompanied by an acknowledgment that the UNFCCC is 'the primary international, intergovernmental forum for negotiating the global response to climate change'.

²⁰⁵ Goals 14.4 and 15.2. For a list of the SDGs, see www.un.org/sustainabledevelopment/sustainable-development-goals

and institutional issues: environmental impact assessment; access to and dissemination of environmental information; techniques of lawmaking and, perhaps most importantly, issues of international governance. The latter encompasses questions of legitimacy, accountability and transparency in decision-making; the participation or representation of the different members of the international community in the international legal process; the operation of compliance mechanisms (including appropriate national judicial and administrative remedies); new techniques of regulation (including economic instruments); and coordination between overlapping or related multilateral environmental treaties and institutions. Second, as environmental issues are increasingly integrated into aspects of economic and development institutions and law, the field in which international environmental law has developed will continue to broaden, creating new challenges for the subject and for lawyers and others involved in its development and application.

FURTHER READING

General resources on the history and development of international environmental law:

L. K. Caldwell, *International Environmental Policy* (Durham, NC/London: Duke University Press, 1990, 2nd edn)

Discussion of the Stockholm Conference and Declaration:

A. C. Kiss and J. D. Sciault, 'La Conference des Nations Unies sur l'Environnement', *Annuaire Français de Droit International* 603 (1972)

L. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 (1973)

Discussion of UNCED and its outcomes:

A. C. Kiss and S. Doumbe-Bille, 'La Conference des Nations Unies sur l'Environnement et le Developpement', *Annuaire Français de Droit International* 823 (1992)

I. M. Porras, 'The Rio Declaration: A New Basis for International Co-operation', 1 *Review of European Community and International Environmental Law* 245 (1992)

N. Robinson (ed.), *International Protection of the Environment: Agenda 21 and the UNCED Proceedings* (New York/London: Oceana, 1992)

P. Sand, 'UNCED and the Development of International Environmental Law', 3 *Yearbook of International Environmental Law* 3 (1992)

J. E. Viñuales (ed.), *The Rio Declaration on Environment and Development: A Commentary* (Oxford: Oxford University Press, 2015)

Web resources:

World Summit on Sustainable Development: www.un.org/events/wssd

Rio+20 Summit: <https://sustainabledevelopment.un.org/rio20.html>

UN Sustainable Development Agenda and SDGs: www.un.org/sustainabledevelopment/sustainable-development-goals

3

Governance: States, International Organisations and Non-State Actors

CHAPTER OUTLINE

This chapter addresses the governance structure of international environmental law. It focuses on the main actors involved in the making, implementation and enforcement of international environmental law rules, namely:

1. states, which remain the primary actors in international environmental governance;
2. international organisations (comprising organisations within the UN system and under multilateral environmental agreements, operating across the global, regional and subregional levels); and
3. non-state actors (encompassing non-profit environmental groups, the scientific community, indigenous peoples, legal groups, individuals and the corporate sector, including transnational corporations).

As in human rights and other areas of international law, the trend in international environmental governance is towards a broadening of the range of actors recognised as having a legitimate governance role.

INTRODUCTION

A wide range of actors participate in those aspects of the international legal order which address environmental issues, including the negotiation, implementation and enforcement of international environmental agreements.¹ Apart from the state delegations that play a central role, a visitor to climate change or other negotiations would find international organisations and non-state actors actively involved. International environmental law is characterised by this phenomenon that, with the possible exception of the human rights field, renders it unique. Various reasons explain this state of affairs. States are involved because they are still the

¹ See generally D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), chs. 2 and 5; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), chs. 4–5, 31–2; D. Bodansky, *The Art and Craft of International Environmental Law* (Cambridge, MA/London: Harvard University Press, 2010), ch. 6; M. A. Drumbl, 'Actors and Law-Making in International Environmental Law', in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010), ch. 1; P. Birnie, A. A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), chs. 2 and 5.

pre-eminent international legal persons. International organisations participate because they have been created by states to address particular environmental or related issues. Of the various non-state participants, the scientific community is involved because, to a great extent, international environmental law is driven by scientific considerations; the corporate sector is involved because of the significant implications which decisions taken at the global level have even for individual companies; and environmental non-governmental organisations (NGOs) are involved because they advocate for concerns often not pursued by states and see the need for active participation at the international level as the lines dividing local, national and global issues disintegrate. The participation of non-state actors in international environmental law has an established history, and is widely accepted.

The various actors have different roles and functions, both as subjects and as objects of international environmental law, including: participating in the lawmaking process; monitoring implementation, including reporting; and ensuring implementation and enforcement of obligations. The role of each actor turns upon its international legal personality and upon the rights and obligations granted to it by general international law and the rules established by particular treaties and other rules. The Rio Declaration and Agenda 21, as well as an increasing number of international environmental agreements, confirm the central role of international organisations and non-state actors in all aspects of the international legal process.²

The increasing complexity of global environmental governance poses significant challenges for the development, implementation and enforcement of international environmental law. For instance, the exponential growth in internationally active non-state actors over the last few decades raises questions over how to accommodate their perspectives and whether all such perspectives have equal legitimacy in international environmental governance processes.³ Moreover, while states continue to be the principal actors in international environmental governance as the only actors with capacity to enter into international agreements, some groups of non-state actors – particularly large transnational corporations – may wield more power and influence in international environmental fora than smaller states. The behaviour of these actors is also not readily subjected to international legal controls despite the capacity for their activities to cause extensive environmental impacts. The resulting ‘governance gap’ remains a key limitation for the effectiveness of international environmental law.⁴

STATES

States are the primary subjects of international law. This remains the case in spite of the incursions made by international organisations into previously sovereign spheres of activity and the expanded role of non-state actors. States create, adopt and implement international legal principles and rules, establish international organisations, and permit the participation of other actors in the international legal process. There are currently 193 member states of the UN, another two states that are not members but participate as observers, and numerous entities that

² See Chapter 2, pp. 41–5.

³ European Environmental Agency, *Global Governance – The Rise of Non-State Actors*, EEA Technical Report No. 4/2011 (2011). See also M. Finger and D. Svarin, ‘Non-state Actors in Global Environmental Governance’, in P. Dauvergne (ed.), *Handbook of Global Environmental Politics* (Cheltenham, UK: Edward Elgar, 2012) 285.

⁴ J. Clapp, ‘Global Environmental Governance for Corporate Responsibility and Accountability’ 5 *Global Environmental Politics* 3 (2005).

do not possess the full characteristics of statehood, including dependent territories and non-self-governing territories.⁵ The role played by the 193 UN member states in the development and application of international law depends on the subject being addressed and on the relationship of their vital interests to that subject, and on a complex blend of economic, political, cultural, geographical and ecological considerations.

Broadly speaking, states are divided by international, legal and institutional arrangements into developed countries, developing countries and economies in transition. Developed countries include the thirty-four member states of the OECD. The twenty-seven states that previously formed part of the 'Soviet bloc' have been referred to as 'economies in transition'.⁶ The rest of the world, including major emerging economies such as China, India, Brazil and South Africa, are the developing states which form the Group of 77.⁷ The Group of 77 sometimes works as a single negotiating bloc within the framework of the UN, although in relation to environmental matters their perspectives vary widely. For example, the Alliance of Small Island States (AOSIS) that emerged during the climate negotiations, advocates for more stringent controls on greenhouse gas emissions than are accepted by other members of the G77.⁸ The UN also recognises a group of Least Developed Countries (LDCs), mostly in Africa,⁹ which have the lowest socio-economic development of all countries and which receive special and differentiated treatment under many environmental treaties.

Within the UN system, states are also arranged into regional groupings, usually for the purpose of elections to UN bodies. The five groupings are: the Latin American and Caribbean Group; the African Group; the Asia-Pacific Group; the Western European and Others Group; and the Eastern European Group (although this grouping is seen as problematic as eleven states are also members of the EU). Frequently in environmental negotiations, these distinctions tend to break down as states pursue what they perceive to be their vital national interests, including their strategic alliances, which may be unrelated to environmental matters. The UNCED negotiations – and more recently the climate change negotiations dealing with post-2020 arrangements – illustrate the extent of the differences existing between and among developed states and developing states on particularly contentious issues: atmospheric emissions, production and trade in living modified organisms, conservation of marine mammals, protection of forests, institutional arrangements and financial resources.¹⁰

⁵ The four characteristics which must traditionally obtain before an entity can exist as a state are: (a) a permanent population; (b) a defined territory; (c) a government; and (d) a capacity to enter into relations with other states: see 1933 Montevideo Convention on the Rights and Duties of States, Art. 1, 165 LNTS 19; R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (Harlow: Longman, 1992, 9th edn), vol. 1, 120–3.

⁶ For an indicative list of developed countries and 'economies in transition', see Appendix 1 to the 1992 Climate Change Convention, and Appendix 2 for a list of OECD members. Poland, Hungary, the Czech Republic and Slovakia, all formerly part of the 'Soviet bloc', have now joined the OECD and can now be considered developed countries. For a list of countries considered by the UN to be 'economies in transition', see the Report of the Secretary General, 'Integration of the Economies in Transition into the World Economy', 8 August 2008, A/63/256.

⁷ The G77, as it is known, does not include all developing countries; there are currently 134 members.

⁸ See Chapter 8, pp. 316–17.

⁹ For a current list of countries currently considered to be LDCs, see www.un.org/en/development/desa/policy/cdp/ldc/ldc_list.pdf

¹⁰ See C. Bail, R. Falkner and H. Marquard, *The Cartagena Protocol on Biosafety* (London: Royal Institute of International Affairs, 2002), Part II. On the international climate change negotiations and the 2015 Paris Agreement, see Chapter 8, pp. 316–30.

INTERNATIONAL ORGANISATIONS

International organisations involved in environmental law are established at the global, regional, subregional and bilateral levels. Almost all international organisations today have some competence or responsibility for the development, application or enforcement of international environmental obligations, including functions related to standard-setting. The decentralised nature of international organisations in the environmental field makes it difficult to assess their role by reference to any functional, sectoral or geographic criteria. They can be divided into three general categories: global organisations associated with the UN and its specialised agencies; regional organisations outside the UN system; and organisations established by environmental and other treaties. Within these categories, there are of course overlaps, since many of the organisations established in the third category were created by acts of the UN or its specialised agencies.¹¹

History of International Organisational Arrangements

The role of international organisations has developed in a somewhat ad hoc manner. Early environmental agreements did not generally establish standing bodies to administer, or ensure implementation of, their provisions. Since 1945, the number of international environmental organisations has flourished, and they have usually been established at the subregional, regional or global level either to deal with specific environmental issues or, as is more often the case, by formally or informally adapting existing organisations to endow them with competence in the area of environmental issues. The Stockholm Conference and UNCED provided opportunities to establish more orderly and coherent arrangements for international organisations in addressing environmental matters. The Stockholm Declaration recognised that the growing global and regional environmental problems required 'extensive co-operation among nations and action by international organisations in the common interest'.¹² Principle 25 called on states to 'ensure that international organisations play a co-ordinated, efficient and dynamic role for the protection and improvement of the environment'. Following the Stockholm Conference, the UN General Assembly established the United Nations Environment Programme (UNEP), an environment secretariat and fund, and an Environment Co-ordination Board to coordinate UN environment activities.¹³

Between Stockholm and UNCED, the environmental activities of global and regional organisations proliferated, and many new organisations were created by environmental treaties and acts. The proliferation did not occur in the context of a coherent strategy, and there was little effort to ensure effective cooperation or coordination between them. Moreover, significant gaps existed, and many activities considered to be particularly harmful to the environment remained outside the scope of formal international institutional authority. Activities relating to the energy, mining and transport (other than air transport) sectors are examples of areas for which no single UN body yet has overall responsibility. The Brundtland Report recognised the gaps, and in 1989 a group of twenty-four developed and developing states adopted the Hague Declaration calling for

¹¹ See e.g. the Conference of the Parties to the 1987 Montreal Protocol (UNEP); the 1989 Basic Convention (UNEP); the 1992 Climate Change Convention (UNGA); the 1992 Biodiversity Convention (UNEP); and the Intergovernmental Panel on Climate Change (WMO/UNEP).

¹² Preambular para. 7. ¹³ See pp. 63–4.

the development of a new institutional authority, within the framework of the UN, with responsibility for preserving the Earth's atmosphere.¹⁴

UNCED, WSSD and the Rio+20 Summit

The UN General Assembly recognised the gaps, overlapping activities and lack of coordination in international environmental arrangements. In 1990, UNCED was called upon to review and examine the role of the UN system in dealing with the environment, to promote the development of regional and global organisations, and to promote international cooperation within the UN system in monitoring, assessing and anticipating environmental threats.¹⁵ Three main issues needing international attention were identified: the role of institutions for environment and development within the UN system; institutional follow-up arrangements after UNCED, especially regarding Agenda 21; and the relationship of the UN system to other institutions in the field of environment and development.¹⁶ During the UNCED negotiations, specific institutional proposals related to five functions and responsibilities: functions related to technical and operational matters; responsibilities for policymaking; coordinating functions; responsibilities for financial matters; and functions relating to the administration and implementation of international law.¹⁷ Proposals on technical and operational functions focused on UNEP, the development of regional institutions in the UN system, and new technical functions, particularly environmental assessment, early warning and emergency response, and energy management.¹⁸

Chapter 38 of Agenda 21 proposed the framework for institutional arrangements. With regard to specific institutions, UNCED proposed the establishment of a UN Commission on Sustainable Development and the further development of UNEP and the United Nations Development Programme (UNDP). It affirmed the central role of the UN General Assembly and the Economic and Social Council (ECOSOC), and provided limited guidance on cooperative mechanisms between UN bodies, and between UN bodies and regional organisations and international financial organisations. Overall, it appears that UNCED missed the opportunity to set in motion a wholesale and effective review of activities and operations. UN General Assembly Resolution 47/191 (1992) endorsed the Agenda 21 recommendations on international institutional arrangements to follow up on UNCED and took the following decisions:

- requested ECOSOC to set up a high-level Commission on Sustainable Development;
- requested all UN specialised agencies and related organisations of the UN system to strengthen and adjust their activities, programmes and plans in line with Agenda 21;
- invited the World Bank and other international, regional and subregional financial and development institutions, including the Global Environment Facility, to submit regularly to the Commission on Sustainable Development reports on their activities and plans to implement Agenda 21;

¹⁴ Declaration of The Hague, 11 March 1989, 28 ILM 1308 (1989). See also J. Ayling, 'Serving Many Voices: Progressing Calls for an International Environmental Organization', 9 *Journal of Environmental Law* 243 (1997). The issue of creation of a World Environment Organisation was raised again in the lead-up to the Rio+20 Summit. While the Summit did not agree on establishment of a new organisation, it issued a mandate for the strengthening of UNEP as the 'environmental pillar' of sustainable development.

¹⁵ UNGA Res. 44/228, para. 15(q), (r) and (t) (1990).

¹⁶ 'Institutional Proposals: Report by the Secretary General of the Conference' A/CONF.151/PC/102 (1991).

¹⁷ *Ibid.*, 5–54. ¹⁸ *Ibid.*, 21–6.

- requested UNEP, UNDP, the United Nations Conference on Trade and Development (UNCTAD), the UN Sudano-Sahelian Office and the regional economic commissions to submit reports of their plans to implement Agenda 21 to the Commission on Sustainable Development; and
- endorsed the view of the UN Secretary General concerning the establishment of a High Level Advisory Board.

UNCED was reviewed at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002. The main outcomes relating to the institutional framework to support sustainable development were recommendations to strengthen institutional arrangements, promote integration of the environmental, social and economic dimensions of sustainable development (referred to as ‘pillars’) into the work of UN regional commissions, enhance interagency coordination and the role of the Commission on Sustainable Development.¹⁹

The Rio+20 Summit another decade on included as a specific theme the ‘institutional framework for sustainable development’.²⁰ Attention particularly focused on options for strengthening the ‘environmental pillar’ of sustainable development. In the lead-up to the Summit, a Consultative Group of Ministers or High-level Representatives on International Environmental Governance identified the following options for broader institutional reform: enhancing UNEP; establishing a new umbrella organisation for sustainable development; creating a specialised agency such as a world environment organisation; introducing possible reforms to the Economic and Social Council (ECOSOC) and the Commission on Sustainable Development; and enhanced institutional reforms and streamlining of present structures.²¹ Ultimately states opted for a combination of these options; they committed to strengthening UNEP as ‘the leading global environmental authority . . . within the United Nations system’;²² agreed to strengthen ECOSOC as ‘a principal organ in the integrated and coordinated follow-up of the outcomes of all major UN Conferences’;²³ and decided to create a new High-level Political Forum for Sustainable Development.²⁴ This forum replaced the Commission on Sustainable Development as the principal institution tasked with the implementation of sustainable development.

The Function and Role of International Organisations

International organisations perform a range of different functions and roles in the development and management of international legal responses to environmental issues, of a judicial, legislative or administrative nature. Specific functions depend upon the powers granted by the organisation’s constituent instrument, as interpreted and applied in practice. Apart from very specific functions required of some particular organisations, international organisations perform five main functions.

First, they provide a forum for cooperation and coordination between states on matters of international environmental management. The participation of states in the activities of

¹⁹ WSSD Plan of Implementation, paras. 120–40. ²⁰ UNGA Res. 64/236 (31 March 2010), para. 20(a).

²¹ Nairobi–Helsinki Outcome adopted by Consultative Group of Ministers or High-level Representatives on International Environmental Governance, Espoo, Finland, 23 November 2010, available at www.unep.org/environmental-governance/Portals/8/NairobiHelsinkiFinalOutcome.pdf

²² UNGA Res. 66/288, *The Future We Want*, para. 88. On the steps taken to deliver on this commitment since Rio+20, see pp. 63–4.

²³ *Ibid.*, para. 83. On the role of ECOSOC in international environmental governance see further, pp. 69–70.

²⁴ *Ibid.*, para. 84. The Forum and the Commission it replaced are discussed further at pp. 67–8.

international organisations is the principal means for consultation and the informal sharing of ideas and information that contribute towards building an international consensus for regional and global action. Thus, the formal negotiation of the 1992 Climate Change Convention followed extensive ‘consciousness-raising’ activities by a number of international organisations, including the UN General Assembly, the WHO, the WMO and the Intergovernmental Panel on Climate Change (IPCC), as well as the less formal settings of the World Climate Conferences held in 1979 and 1990.²⁵ International organisations thus contribute to developing the international agenda on environmental matters, broadening the participation of interested states, and encouraging technical research and development. Such organisations also play an important role in liaising with non-state actors.

The second function of international organisations is more formal, and relates to the provision of information. International organisations receive and disseminate information, facilitate information exchange, and provide for formal and informal consultation between states, and between states and the organisation. They also act as a conduit for the notification of emergencies and other urgent matters.²⁶ In some cases, the information function may include a formal fact-finding role.²⁷

A third function of international organisations is to contribute to the development of international legal obligations, including ‘soft law’. This function may take place informally, where the organisation acts as a catalyst for the development of legal and other obligations outside the organisation itself. Alternatively, it may take place formally and within the organisation, where the organisation adopts acts and decisions that can create legal obligations or which may contribute to the subsequent development of legal obligations.²⁸ International organisations develop policy initiatives and standards, may adopt rules that establish binding obligations or reflect customary law, and can establish new and subsidiary institutional arrangements.²⁹

Once environmental and other standards and obligations have been established, institutions increasingly play a role in ensuring implementation of and compliance with these standards and obligations. Assisting in implementation takes a number of forms. It may be limited to receiving information from parties or other persons on an informal and ad hoc basis, or it may entail the regular receipt and consideration of reports or periodic communications from parties to international environmental treaties as a means of reviewing progress in implementation.³⁰ Assisting in implementation also takes place through the provision of advice on technical, legal and administrative or institutional matters. Under the 1987 Montreal Protocol, the parties seek to ensure implementation through the work of a non-compliance procedure including an Implementation Committee.³¹ This provided a model for the more elaborate non-compliance procedure of the Kyoto Protocol, which comprises two subsidiary bodies, known as the Facilitation Branch and the Enforcement Branch.³² The 1992 Climate Change Convention and 2015 Paris Agreement has its own Subsidiary Body for Implementation to assist the Conference of the

²⁵ See Chapter 8, pp. 299–300. ²⁶ See Chapter 15, pp. 698–9. ²⁷ See Chapter 5, pp. 170–1.

²⁸ See Chapter 4, pp. 116–18, for a discussion of the legal effects of acts of international institutions.

²⁹ Such as the creation of UNEP and the Commission on Sustainable Development by the UN General Assembly, and the Marine Environment Protection Committee by the IMO Assembly.

³⁰ See Chapter 5, pp. 148–52.

³¹ *Ibid.*, pp. 172–5; and Chapter 7, p. 289. The approach has been taken up by other conventions.

³² Chapter 5, pp. 172–5; and Chapter 8, pp. 315–16. See Decision 27/CMP.1: ‘Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol’, Report of the COP serving as the MOP to the Kyoto Protocol, Montreal, 28 November–10 December 2005, FCCC/KP/CMP/2005/8/Add.3, 30 March 2006.

Parties in the assessment and review of the implementation of the Convention and Agreement.³³ There are now a growing number of such institutional arrangements, as described in Chapter 5.

A fifth function of international institutions is to provide an independent forum, or mechanism, for the settlement of disputes, usually disputes between states. This may occur through the work of bodies with general competence, such as a Conference or Meeting of the Parties to an environmental agreement, adopting an authoritative interpretation of a provision,³⁴ or by the reference of an issue to a body created specifically to assist in dispute settlement through a judicial or quasi-judicial function, such as the International Court of Justice, the International Tribunal for the Law of the Sea, the European Court of Justice, human rights courts, or WTO dispute settlement panels.³⁵ Finally, some organisations are granted enforcement or compliance functions. To date, the only institution that has been granted extensive powers and international legal personality to engage in enforcement activities is the European Commission, which has brought several hundred cases to the European Court of Justice against member states alleging non-compliance with their environmental obligations.³⁶

GLOBAL ORGANISATIONS

United Nations (www.un.org)

The UN, its specialised agencies, and subsidiary bodies, organs and programmes are the focal point for international law and institutions in the field of the environment. The UN Charter does not expressly provide the UN with competence over environmental matters. The relevant purposes of the UN include the maintenance of international peace and security, the adoption of measures to strengthen universal peace, and the achievement of cooperation in solving international economic, social, cultural or humanitarian problems.³⁷ Since the late 1960s, however, the practice of the organisation through its principal organs, in particular the General Assembly and the Economic and Social Council (ECOSOC), has been to interpret and apply these broad purposes as including the protection of the environment and the promotion of sustainable development. The UN is the principal forum for global environmental lawmaking and has played a central role in the development of international environmental law, its universal character making it the only 'appropriate forum for concerted political action on global environmental problems'.³⁸ Apart from the Secretariat, the UN has five principal organs: the General Assembly, the Security Council, ECOSOC, the Trusteeship Council and the International Court of Justice.³⁹ Each organ has, to differing degrees, addressed international environmental issues.

³³ Paris Agreement, Art. 10, see Chapter 8, p. 330.

³⁴ See e.g. CITES Conference of the Parties Res. 5.11 on the meaning of the words 'pre-Convention' specimen; see Chapter 10, p. 415.

³⁵ See Chapter 5, pp. 178–804; and p. 72. ³⁶ See *ibid.*, pp. 187–8.

³⁷ Charter of the United Nations, Art. 1(1)–(3).

³⁸ UNGA Res. 44/224 (1990); G. Smith, 'The United Nations and the Environment: Sometimes a Great Notion?', 19 *Texas International Law Journal* 335 (1984).

³⁹ The role of the ICJ is discussed in Chapter 5, pp. 180–4.

Coordination

From 1977 until 2000, coordination between the various UN organs and bodies at the Secretariat level took place under the Administrative Committee on Co-ordination (ACC) (coordination at the political level is a responsibility of ECOSOC), which was established in 1946 to supervise the implementation of the agreements between the UN and the specialised agencies and to ensure that the activities of the various bodies were coordinated.⁴⁰ The ACC comprised the heads of the specialised agencies and related bodies and organs that met several times a year under the chairmanship of the Secretary General. Together with an interagency board of Designated Officials on Environmental Matters, the ACC deliberated and adopted recommendations on the coordination of all environment-related programmes carried on by the participating agencies and bodies, and prepared an annual report to the UNEP Governing Council.

In October 1992, an Inter-Agency Committee on Sustainable Development (IACSD) was established to make recommendations to the ACC and to improve cooperation and coordination between the various UN bodies and organs on issues related to sustainable development, including environmental matters. The IACSD, attended by the senior officials of UN bodies most closely involved in the issues,⁴¹ was established to rationalise subsidiary mechanisms for coordination, allocate and share responsibilities for implementing Agenda 21, monitor financial matters, and assess reporting requirements. In December 1992, the UN Secretary General established a new Department for Policy Co-ordination and Sustainable Development (DPCSD) in the Department of Economic and Social Development, which provided support to ECOSOC and to the Commission on Sustainable Development. This was later consolidated with other departments to form the Department of Economic and Social Affairs, which continues to act as the central coordinating mechanism for policy and programme development on sustainable development issues, including cooperative relationships with international organisations, NGOs, the academic community and the corporate sector. Agenda 21 recognised the important role of the Secretary General, and the need for the further development of the coordination mechanism under the ACC.⁴²

The operation of the ACC was reformed in 2001 as part of former Secretary General Kofi Annan's wider reform efforts. The ACC was renamed the UN System Chief Executives Board for Co-ordination (CEB), a title intended to emphasise the high-level nature of the body and the shift to a more collegial body whose participants share a collective responsibility over an integrated system. The reforms also involved a transformation of the subsidiary structures. The previous multilayered and rigid arrangements of interagency committees were transformed and streamlined into two high-level committees, the High-Level Committee on Programmes and the High-Level Committee on Management. Following a review of the CEB in 2006–7, the United Nations Development Group was integrated as the 'third pillar' of the CEB to ensure that substantive policy coordination and oversight was brought to operational activities at country level. The three high-level committees report to the CEB biannually, and make recommendations on the basis of input received from flexible 'networks' of specialists in different areas of common concern, along with time-bound task-oriented interagency arrangements and thematic working

⁴⁰ ECOSOC Res. 13 (111) (1946).

⁴¹ Senior officials from the following bodies participated: FAO, UNESCO, WMO, WHO, ILO, World Bank, IAEA, UNEP and UNDP; any other ACC member could also take part in discussions on relevant topics.

⁴² Agenda 21, paras. 38.16 and 38.17.

groups.⁴³ These changes have involved the abolition of the previous subsidiary bodies, including the IACSD, and its subcommittees.

UN General Assembly

The UN General Assembly, which is the principal policymaking organ on issues of sustainable development follow-up, has the power to discuss any questions or matters within the scope of the UN Charter, to make recommendations to the member states or to the Security Council on any such questions or matters, and to promote international cooperation in the political, economic, social, cultural, educational and health fields and the progressive development of international law and its codification.⁴⁴ Although it does not have a specific environmental mandate, its proactive role led to its being identified by Agenda 21 as ‘the principal policy-making and appraisal organ’ on UNCED follow-up, having a regular review function.⁴⁵ This review was conducted by a Special Session of the General Assembly convened in June 1997, which produced a Programme for the Further Implementation of Agenda 21.⁴⁶ The Plan of Implementation adopted by the WSSD affirmed the need for the General Assembly to adopt sustainable development as a key element of the overarching framework for United Nations activities and its role in giving overall political direction to the implementation of Agenda 21 and its review.⁴⁷ This was reiterated in the Rio+20 Summit outcome document, *The Future We Want*.⁴⁸

Although its resolutions are not formally binding, the General Assembly has taken decisions which have created new bodies, convened conferences, endorsed principles and substantive rules, and recommended actions.⁴⁹ Its contribution to the development of international environmental law is not to be underestimated. The General Assembly has long been involved in natural resource issues: the 1962 resolution on permanent sovereignty over natural resources was a landmark instrument in the development of international law, and has continued to influence debate and practice on the nature and extent of limitations imposed on states for environmental reasons.⁵⁰ It was only in the late 1960s, however, that the General Assembly began to address the protection of the environment and the conservation of natural resources, and since 1968 it has adopted a large number of resolutions contributing directly or indirectly to the development of substantive legal obligations and new institutional arrangements.

The General Assembly’s early interest in environmental matters related to the protection of the marine environment,⁵¹ the relationship between environment and development,⁵² and cooperation on shared natural resources.⁵³ The General Assembly convened the 1972 UN

⁴³ Annual Overview Report of the United Nations System Chief Executives Board for Co-ordination for 2008/9: E/2009/67. See also Annual Overview Report of the United Nations System Chief Executives Board for Co-ordination for 2014/15: E/2015/71.

⁴⁴ UN Charter, Arts. 10 and 13(1). ⁴⁵ Agenda 21, para. 38.9. ⁴⁶ A/RES/S-19/2.

⁴⁷ WSSD Plan of Implementation, para. 125. On follow-up activities, see A/RES/57/253, A/RES/57/270A, A/RES/57/270B, A/RES/62/189 and A/RES/63/212.

⁴⁸ *Future We Want*, para. 81 (reaffirming the ‘central position’ of the UNGA as the chief deliberative, policymaking and representative organ of the UN and calling on the UNGA ‘to further integrate sustainable development as a key element of the overarching framework for the United Nations’).

⁴⁹ See E. Morgera, ‘United Nations Activities’, 41(1) *Environmental Policy and Law* 2 (2011), for a discussion of developments at the UNGA’s 65th session in 2010.

⁵⁰ UNGA Res. 1803/62; see Chapter 6, p. 202.

⁵¹ UNGA Res. 2467B (XXIII) (1968); UNGA Res. 2566 (XXIV) (1969); and UNGA Res. 3133 (XXVIII) (1973).

⁵² UNGA Res. 2849 (XXVI) (1971). ⁵³ UNGA Res. 3129 (XXIX) (1974).

Conference on the Human Environment,⁵⁴ and created UNEP later that year.⁵⁵ Other bodies created by the General Assembly include the United Nations Development Programme (UNDP), the International Law Commission, UNCED and the Commission on Sustainable Development (now replaced by the High-Level Forum on Sustainable Development). Other relevant bodies established by the UN, which are conspicuous by their more limited actions, include the Committee on the Development and Utilisation of New and Renewable Sources of Energy.⁵⁶ At a more informal level, the General Assembly also created the Open-Ended Informal Consultative Process on Oceans and the Law of the Sea, established on the recommendation of the Commission on Sustainable Development to facilitate the General Assembly's annual review of ocean affairs.⁵⁷

Among the General Assembly resolutions on broad principles are those: declaring the historical responsibility of states for the preservation of nature;⁵⁸ noting the 1978 UNEP draft Code of Conduct;⁵⁹ adopting the 1982 World Charter for Nature;⁶⁰ requesting the UN Secretary General to prepare and regularly update a consolidated list of products whose consumption or sale has been banned, withdrawn, severely restricted or not approved by governments;⁶¹ endorsing the Brundtland Report;⁶² seeking to improve cooperation in the monitoring and assessment of environmental threats;⁶³ coordinating the activities of UN organisations with respect to fisheries policy;⁶⁴ declaring the fundamental values and principles of the international community in the Millennium Declaration;⁶⁵ and seeking to develop a holistic approach to sustainable development 'in harmony with nature'.⁶⁶ The General Assembly also convened UNCED,⁶⁷ the negotiations of the framework Convention on Climate Change,⁶⁸ the Convention on Drought and Desertification,⁶⁹ the negotiations leading to the 1995 Fish Stocks Agreement,⁷⁰ the WSSD,⁷¹ the Millennium Summit⁷² and the 2012 Rio+20 summit.⁷³ In 1997, it adopted the Watercourses Convention.⁷⁴ The General Assembly has only on a few occasions adopted resolutions on substantive matters, examples being the recommendation that moratoria should be imposed on all large-scale pelagic driftnet fishing on the high seas,⁷⁵ and support for the precautionary approach to the conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks.⁷⁶ The General Assembly's 1994 request for an advisory opinion on the

⁵⁴ UNGA Res. 2398 (XXII) (1968). ⁵⁵ UNGA Res. 2997 (XXVII) (1972).

⁵⁶ UNGA Res. 37/250 (1982). This Committee was merged with the Committee on Natural Resources into the Committee on Energy and Natural Resources Development as established by ECOSOC Res. 1998/46 (1998).

⁵⁷ UNGA Res. 54/33 (1999); and UNGA Res. 57/33 (2002). See further www.un.org/depts/los/consultative_process/consultative_process.htm

⁵⁸ UNGA Res. 35/8 (1980). ⁵⁹ UNGA Res. 34/188 (1979). ⁶⁰ UNGA Res. 37/7 (1982).

⁶¹ UNGA Res. 37/137 (1982). ⁶² UNGA Res. 42/187 (1987). ⁶³ UNGA Res. 44/224 (1989).

⁶⁴ UNGA Res. 59/25 (2004).

⁶⁵ UNGA Res. 55/2 (2000). The summit adopted goals and a series of time-bound targets for their achievement that are known as the 'Millennium Development Goals'. One of these goals was to 'integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources'.

⁶⁶ UNGA Res. 65/165 (2010). ⁶⁷ UNGA Res. 44/228 (1989). ⁶⁸ UNGA Res. 45/212 (1990).

⁶⁹ UNGA Res. 47/188 (1992). ⁷⁰ UNGA Res. 48/194 (1993); and UNGA Res. 50/24 (1995).

⁷¹ UNGA Res. 55/199 (2000). See also A/RES/57/253 and A/RES/62/189 concerning implementation and follow-up of the WSSD Plan of Implementation.

⁷² UNGA Res. 54/254. On follow-up activities, see A/RES/57/270A and A/RES/57/270B.

⁷³ UNGA Res. 64/236 (2010). On follow-up activities, see A/RE/67/203 and A/RES/67/213.

⁷⁴ UNGA Res. 52/229 (1997). This Convention is now in force; see further Chapter 9, pp. 361–3.

⁷⁵ UNGA Res. 44/225 (1989). See also Res. 45/197 (1990); Res. 46/215 (1991); and Res. 59/25 (2004).

⁷⁶ UNGA Res. 56/13 (2001).

legality of the use of nuclear weapons resulted in the ICJ affirming the existence of a general obligation of states not to cause transboundary environmental harm.⁷⁷

UN Environment Programme (www.unep.org)

UNEP, based in Nairobi, was established in 1972 by General Assembly Resolution 2997 following the Stockholm Conference, and has played a significant catalytic role in the development of treaties and soft law rules. Its constituent instrument committed it to promote international environmental cooperation; to provide policy guidance for the direction and coordination of environmental programmes within the UN system; to receive and review reports from UNEP's Executive Director on the implementation of the UN's environment programmes; to review the world environment situation; to promote scientific knowledge and information and contribute to technical aspects of environmental programmes; and to maintain under review the impact of national and international environmental policies on developing countries.⁷⁸ As originally constituted, it comprised a Governing Council of fifty-eight members elected by the General Assembly and reporting to the General Assembly through ECOSOC, a Global Ministerial Forum convened annually to review important and emerging environmental policy issues (with the Governing Council constituting the forum either in its regular or in its special sessions) and an Environment Secretariat headed by the UNEP Executive Director.

UNEP's limited status as a UN programme (rather than a specialised agency or body) and its limited financial resources, constrained its ability to set the global environmental agenda. Following the Rio+20 Summit at which states committed to strengthening UNEP as the 'environmental pillar' of sustainable development, the UN General Assembly resolved to:

Strengthen and upgrade the United Nations Environment Programme in the manner set out in subparagraphs (a) to (h) of paragraph 88 of the outcome document, entitled 'The future we want'.⁷⁹

This includes establishing 'universal membership in the Governing Council' of UNEP and steps to ensure 'stable, adequate and increased financial resources' for the programme.⁸⁰

The UNEP Governing Council hosted its final 27th Session in its new incarnation as a UN environmental programme with universal membership in Nairobi in February 2013, with all 193 UN member states automatically becoming members of the Governing Council. UNEP's plenary body – now known as the United Nations Environment Assembly (UNEA)⁸¹ – held its first biennial meeting in June 2014 in Nairobi with participation from 170 national delegations, adopting decisions on air pollution, plastic debris in the oceans, chemicals, waste and the marine environment, as well as illegal trade in wildlife and environmental crimes.⁸² As to the significance of UNEP's reconstitution as a programme of universal membership, some see this as 'a watershed development' and predict that UNEP 'could formally emerge as a global

⁷⁷ Chapter 6, p. 206. Other attempts to get the UNGA to request an advisory opinion from the ICJ on environmental matters – such as Palau's attempt in 2012 on the issue of climate change – have not been successful.

⁷⁸ UNGA Res. 2997 (XXVII) (1972), section I, para. 2. See generally C. A. Petsonk, 'The Role of the United Nations Environment Programme in the Development of International Environmental Law', 5 *American University Journal of International Law and Policy* 351 (1990).

⁷⁹ UNGA Res. 67/213 (2014), para. 4. ⁸⁰ *Ibid.* ⁸¹ UNGA Res. 67/251.

⁸² UNEA Res. 1/3 (2014). A second meeting of the UN Environment Assembly was held in May 2016.

environmental forum that acts as a global environmental authority as well as reflects the wishes and expectations of all the members of the United Nations'.⁸³

Notwithstanding its continuing lack of status as a UN specialised agency, few observers would dispute that UNEP has made an important contribution to the development and application of international environmental law. UNEP promoted the Regional Seas Programme, which now includes more than thirty environmental treaties and numerous regional 'Action Plans',⁸⁴ and has been responsible for the development of several global environmental treaties, including the 1985 Vienna Convention and 1987 Montreal Protocol (ozone), the 1989 Basel Convention (hazardous waste), the 1992 Biodiversity Convention, the 2000 Biosafety Protocol, the 2001 POPs Convention, the 2003 Carpathians Convention, the 2010 Nagoya Protocol and the 2013 Minamata Mercury Convention. UNEP provides secretariat functions to these treaties and performs a supportive role in relation to several others including the 1998 Chemicals Convention (with FAO). UNEP has also been responsible for sponsoring numerous soft law instruments, including the 1978 draft principles on shared natural resources, offshore mining and drilling,⁸⁵ and instruments on land-based marine pollution,⁸⁶ the management of hazardous wastes,⁸⁷ environmental impact assessment,⁸⁸ and the international trade in chemicals.⁸⁹ It has also prepared guidelines for the development of domestic legislation on: liability, response action and compensation for damage caused by activities dangerous to the environment;⁹⁰ and access to information, public participation and access to justice in environmental matters.⁹¹ UNEP has focused attention on the inadequacy of existing international legal instruments in the field of the environment and has sought to further develop international environmental law in a variety of ways. Among its most important initiatives has been the regular convening of the experts group that led to the Programme for the Development and Periodic Review of Environmental Law (Montevideo Programme), as revised.⁹² This continues to form the basis for many of its activities in the field of environmental law reform.

Resolutions of the UNEP Governing Council (now the UNEA) guide the development of UNEP's contribution to international law. These resolutions are supplemented by the activities of the Division of Environmental Law and Conventions, which together with the IUCN and FAO maintains the ECOLEX Internet database on environmental law.⁹³ The Division of Environmental Policy Implementation is responsible for issues relating to environmental governance, including compliance and enforcement. UNEP participates in the Global Environmental

⁸³ Bharat H. Desai, 'The Advent of the United Nations Environment Assembly', 19(2) *ASIL Insights* (15 January 2015).

⁸⁴ The Programme is administered by the UNEP Ocean and Coastal Areas Programme Activity Centre (OCA/PAC); see Chapter 11, pp. 465–72.

⁸⁵ 1982 Guidelines Concerning the Environment Related to Offshore Mining and Drilling Within the Limits of National Jurisdiction, UNEP GC Dec. 10/14/(VI) (1982).

⁸⁶ 1985 Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-Based Sources, adopted by UNEP GC Dec. 13/18(II) (1985); see Chapter 11, pp. 476–8.

⁸⁷ 1987 Cairo Guidelines for the Environmentally Sound Management of Hazardous Wastes, UNEP GC Dec. 14/30 (1987); see Chapter 12, p. 571.

⁸⁸ 1987 Goals and Principles of Environmental Impact Assessment, adopted by UNEP GC Dec. 14/25 (1987); see Chapter 14, p. 658.

⁸⁹ 1987 London Guidelines for the Exchange of Information on Chemicals in International Trade, adopted by UNEP GC Dec. 14/27 (1987) and amended by UNEP GC Dec. 15/30 (1989); see Chapter 12, p. 586.

⁹⁰ UNEP/Env.Law/IGM.Lia/2/2 (2009). ⁹¹ UNEP/Env.Law/IGM.Acc/1/2 (2009).

⁹² First adopted by UNEP GC Dec. 10/21 (1982), and most recently UNEP GC 25/CW/L.3 (2009); see Chapter 2, p. 36.

⁹³ www.ecolex.org

Monitoring System (GEMS) and collaborates in the operation of INFOTERRA.⁹⁴ UNEP also established, on an experimental basis, the UN Centre for Urgent Environmental Assistance, focusing on assessment of and responses to man-made environmental emergencies.⁹⁵ This has since merged with the activities of the UN Office for the Coordination of Human Affairs to form the Joint Environment Unit. UNEP's increasingly focused and enhanced role is also reflected in the decision granting it co-management responsibilities, with UNDP and the World Bank, of the Global Environment Facility.⁹⁶

The need to enhance and strengthen the policy and coordination role of UNEP was recognised by UNCED in Chapter 38 of Agenda 21. The priority areas for UNEP set out in Agenda 21 included: strengthening its 'catalytic role', through the development of techniques such as natural resource accounting and environmental economics; promoting environmental monitoring and assessment; coordinating scientific research; disseminating information and raising general awareness; further developing international environmental law, including promoting implementation and coordinating functions; further developing environmental impact assessment; and providing technical, legal and institutional advice.⁹⁷ UNEP's present strategic priorities include: climate change, disasters and conflicts, ecosystem management, environmental governance, chemicals and waste, resource efficiency, and environment under review (focusing on the science-policy interface).⁹⁸

UN Development Programme (www.undp.org)

The UN General Assembly established the UN Development Programme (UNDP) in 1965.⁹⁹ It is the principal channel for multilateral technical and investment assistance to developing countries. It is active in all economic and social sectors and has addressed environmental issues since the early 1970s. UNDP receives voluntary contributions from participating states, as well as donor co-financing, and additional finance from the business sector, foundations and NGOs. Its estimated available resources for 2014 to 2017 total approximately \$24 billion USD. The role of UNDP in environmental programmes has been strengthened by its participation in the management of important programmes and institutions, such as the UN-REDD Programme,¹⁰⁰ and the Global Environment Facility. In 2001, UNDP adopted major reforms which realigned its global network around six thematic practice areas, including energy and environment, the focus of which was on building developing country capacity to protect natural resources wisely, acquire them affordably and use them sustainably. More recent strategic planning of the organisation seeks to respond to the goals of the Millennium Declaration, which set benchmarks for development and poverty alleviation to be achieved by 2015, and to strengthen post-2015 frameworks for development, disaster risk reduction and climate change.¹⁰¹ The focus of UNDP in this respect is on three interconnected areas for development action: sustainability, democratic governance,

⁹⁴ Chapter 2, p. 31. ⁹⁵ UNEP GC Dec. 16/9 (1991).

⁹⁶ Instrument for the Establishment of the Restructured Global Environment Facility, Geneva, 16 March 1994, 33 ILM 1273 (1994) (as amended in 1998, 2002, 2006, 2010 and 2014). For the latest March 2015 version, see www.thegef.org/gef/instrument

⁹⁷ Agenda 21, paras. 38.21 and 38.22. ⁹⁸ UNEP, Medium Term Strategy 2014–2017 (2015).

⁹⁹ UNGA Res. 2029 (XX) (1965).

¹⁰⁰ See www.un-redd.org. REDD activities are designed to reduce emissions from deforestation and forest degradation in developing countries.

¹⁰¹ UNDP, *UNDP in Action 2009/2010: Delivering on Commitments* (2010), 2, 5–7; UNDP, *Annual Report of the Administrator on the Strategic Plan to the Executive Board* (2010); UNDP Strategic Plan 2014–2017.

and climate and disaster resilience. The sustainability theme covers effective maintenance and protection of natural capital, sustainable access to energy and improved energy efficiency. The resilience theme encompasses both recovery from conflict-induced crises and building a much stronger ability to prepare for and deal with the consequences of natural disasters, especially as they are exacerbated by climate change.¹⁰²

UNDP's role is to help developing countries strengthen their capacity to deal with these challenges at global, national and community levels, seeking out and sharing best practices, providing policy advice and linking partners through practical pilot projects on the ground. UNDP's work in the area of energy and the environment is supported by a trust fund known as the Environment and Energy Thematic Trust Fund.¹⁰³ UNDP also administers several special-purpose funds that are relevant to environmental matters,¹⁰⁴ and is particularly active in translating international efforts into grass-roots programmes and activities.

International Law Commission (www.un.org/law/ilc)

The International Law Commission (ILC) was established by the General Assembly in 1947 to promote the 'progressive development of international law and its codification'.¹⁰⁵ Since 1981, it has had thirty-four members, who are persons of recognised competence in the field of international law elected by the UN General Assembly (the original membership of fifteen was raised to twenty-one in 1956 and to twenty-five in 1961). Since 1949, the ILC has worked on over fifty topics. Apart from its important contribution to the development of general aspects of international law, including the law of treaties, state responsibility, and treaties between states and international organisations and between two or more international organisations, the ILC has also addressed environmental issues and contributed significantly to the development of international environmental law.¹⁰⁶ Its draft Articles on the legal regime of the high seas and territorial waters led to the development of the 1958 Geneva Conventions, which include provisions that have influenced the development of environmental law. The ILC's draft Articles on the Law of the Non-Navigational Uses of International Watercourses, completed in 1994, led to the adoption of the 1997 Watercourses Convention. In 2001, the ILC adopted draft Articles on the Responsibility of States for Internationally Wrongful Acts and draft Articles on the Prevention of Transboundary Harm from Hazardous Activities.¹⁰⁷ In 2002, the ILC decided to resume work on the liability aspects of the long-standing topic of International Liability for Injurious Consequences Arising out of Acts Not Prohibited by International Law, and established a new

¹⁰² UNDP Strategic Plan 2014–2017.

¹⁰³ From 2001 to 2004, the Energy and Environment Practice managed two separate Thematic Trust Funds (TTFs), one for Environment and one for Energy. As per Executive Board decision in 2004, the Energy TTF was merged with the TTF on Environment to form a new TTF on Environment and Energy as of the beginning of 2005. See www.undp.org/content/undp/en/home/ourwork/environmentandenergy/EETTF.html

¹⁰⁴ For example, the UN REDD Programme Fund and the Sustainable Energy for All Initiative.

¹⁰⁵ UNGA Res. 174 (II) (1947) (as subsequently amended), Art. 1. In this context, the 'progressive development of international law' means the 'preparation of draft conventions on subjects which have not yet been regulated by international law or in regard to which the law has not yet been sufficiently developed in the practice of States', and 'codification' means 'the more precise formulation and systematisation of rules of international law in fields where there already has been extensive state practice, precedent and doctrine' (Art. 15).

¹⁰⁶ See generally G. Hafner and H. Pearson, 'Environmental Issues in the Work of the ILC', 11 *Yearbook of International Environmental Law* 3 (2000); L. B. Arevalo, 'The Work of the International Law Commission in the Field of International Environmental Law' 32 *Boston College Environmental Affairs Law Review* 493 (2005).

¹⁰⁷ Chapter 16, pp. 769–70; Chapter 6, p. 211; and Chapter 15, p. 744.

project on Shared Natural Resources.¹⁰⁸ It adopted Draft Principles on the Allocation of Loss in the Case of Transboundary Harm arising out of Hazardous Activities in 2006,¹⁰⁹ and draft Articles on the Law of Transboundary Aquifers in 2008.¹¹⁰ Environmentally relevant topics currently under consideration by the Commission include Protection of the Environment in relation to Armed Conflicts; Protection of the Atmosphere; and Protection of Persons in the Event of Disasters.¹¹¹

High-Level Political Forum on Sustainable Development (sustainabledevelopment.un.org/hlpf)
The High-Level Political Forum on Sustainable Development (HLPF) was established following the Rio+20 Summit as the main UN platform on sustainable development. It is tasked with: providing political leadership, guidance and recommendations for sustainable development; undertaking follow-up and review of progress of implementation of sustainable development commitments; enhancing the integration of the economic, social and environmental dimensions of sustainable development; and ensuring the appropriate consideration of new and emerging sustainable development challenges. The HLPF is also the body tasked with implementation of the post-2015 development agenda and the sustainable development goals (SDGs).¹¹² The HLPF replaces the UN Commission on Sustainable Development (CSD) established by the General Assembly and ECOSOC in 1992 pursuant to the mandate in Agenda 21.¹¹³ The decision to replace the CSD with the HLPF was taken at the Rio+20 Summit with the intention of elevating the consideration of sustainable development to the attention of heads of state and government.

The HLPF convenes heads of state and government every four years under the auspices of the General Assembly to promote sustainable development progress and address new challenges.¹¹⁴ Each such meeting must result in ‘a concise negotiated political declaration’ to be submitted for consideration to the General Assembly.¹¹⁵ The HLPF will also meet annually under the auspices of ECOSOC to consider thematic issues with participation from all member states of the UN and its specialised agencies.¹¹⁶ The HLPF is assisted by a secretariat provided by the UN Department of Economic and Social Affairs. Like the CSD it replaced, the HLPF is intended to operate transparently and is open to NGO participation.¹¹⁷ The HLPF is also specifically charged with strengthening the science-policy interface by bringing together dispersed information and assessments, which may take the form of a global sustainable development report.¹¹⁸ The HLPF held its first meeting under the auspices of the General Assembly in September 2013, followed by annual meetings under the auspices of the ECOSOC in 2014 and 2015. Starting in 2016, the HLPF was charged with ‘follow-up and implementation of sustainable development commitments and objectives, including those related to the means of implementation, within the context of the

¹⁰⁸ Chapter 16, p. 747.

¹⁰⁹ ILC, ‘Report of the International Law Commission on the Work of Its Fifty-Eighth Session’, 61 UN GAOR, UN Doc. A/61/10 (2006) (containing the Draft Principles).

¹¹⁰ ILC, ‘Report of the International Law Commission on the Work of Its Sixtieth Session’, 63 UN GAOR, UN Doc. A/63/10 (2008) (containing the Draft Principles). The ILC also commenced but ultimately discontinued work on shared natural resources in the field of oil and gas. See ILC, ‘Report of the International Law Commission on the Work of Its Sixty-First Session’, 64 UN GAOR, UN Doc. A/64/10 (2009), Chapter VIII; ‘Report of the International Law Commission on the Work of Its Sixty-Second Session’, 65 UN GAOR, UN Doc. A/65/10 (2010), Chapter XII.

¹¹¹ ILC, ‘Report of the International Law Commission on the Work of Its Sixty-Seventh Session’, 70 UN GAOR, UN Doc. A/70/10 (2015).

¹¹² UNGA Res. 67/290 (2013); UNGA Res. 69/214 (2015). ¹¹³ UNGA Res. 47/191 (1992).

¹¹⁴ UNGA Res. 67/290 (2013), para. 6. ¹¹⁵ *Ibid.* ¹¹⁶ Paras. 3, 4 and 7. ¹¹⁷ Para. 15. ¹¹⁸ Para. 20.

post-2015 development agenda'.¹¹⁹ Such reviews are to be voluntary 'while encouraging reporting' and include developed and developing countries as well as relevant UN entities.¹²⁰

Other Subsidiary Bodies Established by the General Assembly

The General Assembly has established numerous other bodies with less direct responsibility for environmental issues.

The UN Conference on Trade and Development (UNCTAD) was established by the General Assembly in 1964 as one of its organs.¹²¹ UNCTAD's functions include promoting international trade with a view to accelerating the economic growth of developing countries, and formulating and implementing principles and policies on international trade and the related problems of economic development. The eighth session of UNCTAD, held in 1992, adopted 'A New Partnership for Development: The Cartagena Commitment', which committed UNCTAD to a programme of ensuring that growth and development, poverty alleviation, rural development and the protection of the environment are 'mutually reinforcing'.¹²² UNCTAD has convened international commodity conferences that have led to the negotiation and adoption of international agreements on individual commodities, under the Integrated Programme for Commodities.¹²³ The Bangkok Declaration and Programme of Action, adopted in February 2000 at the tenth session of UNCTAD,¹²⁴ provide the main thrust for the current work of UNCTAD, as the focal point for the integrated treatment of development and the interrelated issues of trade, finance, investment, technology and sustainable development. The Bangkok Programme of Action made a number of specific recommendations on the focus of UNCTAD's work on trade and the environment.¹²⁵

Other bodies created by the General Assembly which play a role in international environmental issues include: the United Nations Institute on Training and Research (UNITAR), whose role is to carry out training programmes and initiate research programmes;¹²⁶ the UN Population Fund (UNFPA), which promotes awareness of the social, economic and environmental implications of national and international population problems;¹²⁷ the Committee on Peaceful Uses of Outer Space (COPUOS) to review international cooperation in peaceful uses of outer space and study associated legal problems;¹²⁸ the Scientific Committee on Effects of Atomic Radiation (UNSCEAR) to consider the effects of radiation levels and radiation on humans and their environment;¹²⁹ and the United Nations Human Settlements Programme, known as UN-Habitat,

¹¹⁹ Para. 8. ¹²⁰ Para. 8(a). ¹²¹ UNGA Res. 1995 (XIX) (1964); www.unctad.org

¹²² TD (VIII)/MISC.4 (1992), para. 63. See also paras. 118–23 (environment and development finance, and resource allocation and sustainable development); paras. 151–5 (environment and trade); and para. 208 (commodities and sustainable development).

¹²³ Important International Commodity Agreements (ICAs) include the International Cocoa Agreement (extended in 2012 until 2026) and the International Tropical Timber Agreement (renewed in 2006 for a ten-year period). ICAs have not always been successful, however, in safeguarding commodities produced in developing countries from market volatility (G. Gorton and K. G. Rouwenhorst, 'Facts and Fantasies about Commodity Futures' 62 *Financial Analysts Journal* 47 (2006)).

¹²⁴ Bangkok Declaration (TD/387) and Bangkok Programme of Action (TD/386), both adopted 18 February 2000.

¹²⁵ TD/386, para. 147. ¹²⁶ UNGA Res. 1934 (XVIII) (1963); www.unitar.org

¹²⁷ UNGA Res. 2211 (XXI) (1966); ECOSOC Res. 1763 (LIV) (1966); renamed by UNGA Res. 42/430 (1987); www.unfpa.org

¹²⁸ UNGA Res. 1472 (XIV) (1959); the Committee's work has led to the negotiation and adoption of, inter alia, the 1967 Outer Space Treaty, the 1972 Space Liability Convention, the 1979 Moon Treaty and the 1992 Outer Space Principles: see Chapter 7, pp. 290–2; www.unoosa.org/oosa/en/ourwork/copuos/index.html

¹²⁹ UNGA Res. 913 (X) (1955); www.unscear.org

which has a mandate to promote socially and environmentally sustainable towns and cities.¹³⁰ Additionally, several human rights treaties have established committees to monitor implementation that report on their activities to parties and to the General Assembly. Of particular relevance to environmental matters are the Human Rights Committee (established under the 1966 International Covenant on Civil and Political Rights) and the Committee on Economic, Social and Cultural Rights (established under the 1966 International Covenant on Economic, Social and Cultural Rights).¹³¹ In November 2002, the Committee on Economic, Social and Cultural Rights issued a General Comment recognising access to safe drinking water and sanitation as a human right, which stresses that water is a limited natural resource and a public commodity fundamental to life and health.¹³²

Economic and Social Council (ECOSOC)

The Economic and Social Council (ECOSOC), which has fifty-four members serving three-year terms, has competence over international economic, social, cultural, educational and health issues, and related matters. Today it functions as the UN's principal body for coordination, policy review, policy dialogue and recommendations on economic, social and environmental issues, as well as for implementation of the Millennium Development Goals and their transition to the Sustainable Development Goals. In the wake of the Rio+20 Summit, ECOSOC underwent major reform to recognise its lead role in achieving balanced integration of the economic, social and environmental dimensions of sustainable development.¹³³ This includes the Council's role in convening the High-Level Political Forum on Sustainable Development and a new 'integration segment' of Council meetings.

Under the UN Charter, ECOSOC is mandated to make recommendations with respect to international economic, social, cultural, educational and health issues, and related matters to the General Assembly, to the UN members and to specialised agencies, and it can also prepare draft conventions.¹³⁴ ECOSOC has responsibility for coordinating the activities of specialised agencies, including UNEP and the HLPF, and obtaining regular reports from them.¹³⁵ This coordinating function was underlined by UNCED and affirmed by the Rio+20 Summit; the latter reaffirmed that ECOSOC is 'a central mechanism for ... promoting the implementation of Agenda 21 by strengthening system-wide coherence and coordination'.¹³⁶

ECOSOC has contributed to the development of international environmental law. In 1946, it convened the 1949 UN Scientific Conference on the Conservation and Utilisation of Resources (UNCCUR), the predecessor to the Stockholm and Rio Conferences.¹³⁷ However, since it does not have any committees that focus exclusively on the environment, it has not itself served as a forum for important decisions on these matters. It has, however, established subsidiary bodies relevant to the environment.

¹³⁰ UNGA Res. 56/206 (2002) transformed the former Commission on Human Settlements and its secretariat, the United Nations Centre for Human Settlements (Habitat), including the United Nations Habitat and Human Settlements Foundation, into the United Nations Human Settlements Programme, known as UN-Habitat; www.unhabitat.org Chapter 17, pp. 817ff.

¹³² United Nations Committee on Economic, Social and Cultural Rights, General Comment No. 15, adopted 26 November 2002.

¹³³ UNGA Res. 68/1 (2013). ¹³⁴ UN Charter, Art. 62(1) and (3). ¹³⁵ *Ibid.*, Arts. 63(2) and 64(1).

¹³⁶ Agenda 21, para. 38.10; *Future We Want*, para. 82.

¹³⁷ *UN Yearbook 1946-47* (1947), 491; see Chapter 2, pp. 26-7.

In particular, the five Regional Economic Commissions, established under Article 68 of the UN Charter, have contributed significantly to the development of international environmental law.¹³⁸ Under the auspices of the UN Economic Commission for Europe (UNECE),¹³⁹ regional treaties have been adopted on: transboundary air pollution;¹⁴⁰ environmental impact assessment;¹⁴¹ industrial accidents;¹⁴² protection of watercourses;¹⁴³ and public access and participation in environmental decision-making.¹⁴⁴ In 1995, the UNECE ministers adopted the Environmental Programme for Europe, the first attempt to set long-term environmental priorities at the pan-European level and to make Agenda 21 more operational in the European context.¹⁴⁵ This programme has evolved into the 'Environment for Europe' process. In 2007, a significant reform process of 'Environment for Europe' was initiated in order to ensure that it remains relevant and valuable, and to strengthen its effectiveness as a mechanism for improving environmental quality and the lives of people across the region.¹⁴⁶

The other UN Regional Economic Commissions are responsible for Asia and the Pacific (ESCAP),¹⁴⁷ Africa (ECA),¹⁴⁸ Latin America and the Caribbean (CEPAL)¹⁴⁹ and Western Asia.¹⁵⁰ Although these Regional Economic Commissions have not yet promoted the negotiation of international environmental agreements, they play some role in developing 'soft' instruments and the regional preparatory arrangements for international conferences and meetings.

In 2000, ECOSOC established the UN Forum on Forests with a mandate to promote the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end.¹⁵¹ Over the first five years of its operation, in addition to its more generalised activities, the Forum was to work on a mandate for developing a legal framework for all types of forests. This work resulted in the adoption of a Non-Legally Binding Instrument on All Types of Forests (now known as the UN Forests Instrument) on 28 April 2007. The instrument represented the first time that member states had agreed to an international instrument for sustainable forest management. The instrument was adopted by the UN General Assembly on 17 December 2007.¹⁵²

Other relevant ECOSOC subsidiary bodies include: the Permanent Forum on Indigenous Issues, an expert advisory body with a mandate to consider indigenous issues relating to economic and

¹³⁸ See UNGA Res. 46/235 (1991).

¹³⁹ ECOSOC Res. 36 (IV) (1947). Its members are located in the European Union, non-EU Western and Eastern Europe, South-East Europe and Commonwealth of Independent States (CIS) and North America; www.unece.org

¹⁴⁰ 1979 LRTAP Convention and Protocols; see Chapter 7, pp. 261ff.

¹⁴¹ 1991 Espoo Convention; see Chapter 14, pp. 675–6.

¹⁴² See 1992 Industrial Accidents Convention; see Chapter 12, pp. 576–8.

¹⁴³ 1992 Watercourses Convention; see Chapter 9, pp. 361–3.

¹⁴⁴ 1998 Aarhus Convention; see Chapter 5, pp. 175–6; and Chapter 15, pp. 710–12.

¹⁴⁵ Environmental Programme for Europe, adopted at the 1995 Sofia Ministerial Conference on Environment for Europe.

¹⁴⁶ By agreement of the ministers at the 2007 Belgrade Ministerial Conference on Environment for Europe: Sixth Ministerial Conference 'Environment for Europe', Belgrade (10–12 October 2007). See the Chair's Summary: ECE/BELGRADE.CONF/2007/9 (16 October 2007).

¹⁴⁷ ECOSOC Res. 37 (IV) (1947), as the Economic Commission for Asia and the Far East; the name was changed to ESCAP by ECOSOC Res. 1895 (LVII) (1974); www.unescap.org

¹⁴⁸ ECOSOC Res. 671 (XXV) (1958) to develop 'concerted action for the economic development of Africa, including its social aspects, with a view to raising the level of economic activity and levels of living in Africa'; www.uneca.org

¹⁴⁹ ECOSOC Res. 106 (VI) (1948); www.cepal.org

¹⁵⁰ ECOSOC Res. 1818 (LV) (1973) as the Economic Commission for West Asia; ECOSOC Res. 1985/69 to ESCWA; www.escwa.org.lb

¹⁵¹ ECOSOC Res. 2000/35. ¹⁵² UNGA Res. 62/98 (31 January 2008).

social development, culture, the environment, education, health and human rights;¹⁵³ the Commission on Population and Development;¹⁵⁴ the Commission on Social Development;¹⁵⁵ the Committee for Development Policy;¹⁵⁶ and the Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals.¹⁵⁷ The now-disbanded Commission on Transnational Corporations carried out useful work examining the relationship between transnational corporations and international environmental obligations.¹⁵⁸

Security Council

The Security Council, which has primary responsibility in the UN system for the maintenance of international peace and security,¹⁵⁹ has only addressed international environmental issues relatively recently. Its five permanent members and ten members elected for a period of two years can adopt legally binding resolutions, which give it the potential to develop a significant role.¹⁶⁰

The Security Council's first foray into environmental affairs was in 1991, when it adopted a resolution holding Iraq liable for, inter alia, damage to the environment resulting from the invasion of Kuwait.¹⁶¹ In the following years it met for the first time at the level of heads of government or state, and adopted a declaration that affirmed that 'non-military sources of instability in the economic, social, humanitarian and ecological fields have become threats to peace and security'.¹⁶² In recognising the link between environment and security, the Security Council opened the door to further consideration of significant environmental matters, including environmental emergencies and their consequences.¹⁶³ In 2001, the Security Council addressed the link between the illegal exploitation of natural resources and armed conflict in Africa.¹⁶⁴ This has also been a theme of more recent resolutions, such as the Council's 2014 resolutions recognising wildlife poaching and illegal trade as threats to international peace and security.¹⁶⁵ The Security Council has examined the implications of climate change for security, holding its first ever debate on the impacts of climate change on peace and security in 2007.¹⁶⁶ This was

¹⁵³ ECOSOC Res. 2000/22. ¹⁵⁴ ECOSOC Res. 150 (VII) (1948), Res. 87 (LVII) (1975) and Res. 1995/55.

¹⁵⁵ ECOSOC Res. 10 (II) (1946), Res. 1139 (XLI) (1966) and Res. 1996/7.

¹⁵⁶ ECOSOC Res. 1998/46, which renamed the former Committee on Development Planning originally established by ECOSOC Res. 1079 (XXXIX) (1965); www.un.org/esa/analysis/devplan

¹⁵⁷ ECOSOC Res. 1999/65, which reconfigured the former Committee of Experts on the Transport of Dangerous Goods into the current Committee.

¹⁵⁸ ECOSOC Res. 1913 (LVII) (1974). ¹⁵⁹ UN Charter, Art. 24(1). ¹⁶⁰ Art. 25.

¹⁶¹ Security Council Res. 687/1991 (1991).

¹⁶² Note by the President of the Security Council on 'The Responsibility of the Security Council in the Maintenance of International Peace and Security', UN Doc. S/23500, 31 January 1992, 2.

¹⁶³ Lorraine Elliott, 'Imaginative Adaptations: A Possible Environmental Role for the UN Security Council', 24(1) *Contemporary Security Policy* 47 (2003).

¹⁶⁴ Report of the Panel of Experts on the Illegal Exploitation of Natural Resources and Other Forms of Wealth of the Democratic Republic of the Congo: S/2001/357 and Security Council Res. S/RES/1355 (2001) and S/RES/1376 (2001).

¹⁶⁵ S/RES/2134 (2014) and S/RES/2136 (2014). See also Anne Peters, 'Novel Practice of the Security Council: Wildlife Poaching and Trafficking as a Threat to the Peace'. EJIL Talk! Blog of the *European Journal of International Law*, 12 February 2014. www.ejiltalk.org/author/anne-peters

¹⁶⁶ 5663rd meeting. See Francesco Sindico, 'Climate Change – A Security (Council) Issue?', 1 *Carbon and Climate Law Review* 26–31 (2007); Trina Ng, 'Safeguarding Peace and Security in Our Warming World: A Role for the Security Council', 15(2) *Journal of Conflict and Security Law* 275 (2010).

followed by other meetings on climate–security linkages such as the Security Council meeting in June 2015 on Climate Change as a Threat Multiplier for Global Security.¹⁶⁷

Trusteeship Council

The Trusteeship Council was established to assist the Security Council and the General Assembly in performing the UN's functions under the International Trusteeship System of Chapter XII of the UN Charter. With the independence of Palau, the last remaining UN trust territory, the Trusteeship Council suspended operation on 1 November 1994 and now meets only as occasion requires, by its decision or the decision of its President, or at the request of a majority of its members or the General Assembly or the Security Council. Its basic objectives include the promotion of political, economic, social and educational advancement of the inhabitants of trust territories, without specifying environmental objectives.¹⁶⁸ While the Trusteeship Council did not play a direct role in the development of international environmental law, its obligation to respect these basic objectives provided a role in natural resource issues, including conservation. The role of the Trusteeship Council was therefore indirectly at issue in the case *Certain Phosphate Lands in Nauru*, where Nauru asked the ICJ to declare Australia's responsibility for breaches of international law relating to phosphate mining activities, including, inter alia, breaches of Article 76 of the UN Charter and the Trusteeship Agreement between Australia, New Zealand and the United Kingdom.¹⁶⁹

International Court of Justice (www.icj-cij.org)

The environmentally related activities of the International Court of Justice (ICJ) are considered in more detail in Chapter 5. Through its judgments and advisory opinions, the ICJ has contributed to the development of international environmental law through general principles and rules elaborated in non-environmental cases and in cases concerned directly with environmental issues.¹⁷⁰ Cases in the past two decades raising significant environmental issues include the *Gabčíkovo–Nagymaros Project (Hungary/Slovakia)* case, the *Pulp Mills* case, the *Advisory Opinion on the Legality of the Use or Threat of Use of Nuclear Weapons*, the *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests case (New Zealand v. France)* and the *Whaling in the Antarctic (Australia v. Japan; New Zealand intervening)* decision. In July 1993, the ICJ established a seven-member Chamber for Environmental Matters, but this was disbanded in 2006.

¹⁶⁷ See further <http://climateandsecurity.org/2015/07/08/un-security-council-meeting-on-climate-change-as-a-threat-multiplier-for-global-security>

¹⁶⁸ See UN Charter, Art. 76. As the number of international trusteeships steadily declined, alternative functions for the Trusteeship Council were proposed. One idea, put forward by President Gorbachev of the Soviet Union in 1990, was to expand the trusteeship function to include responsibility for environmental protection in areas beyond national jurisdiction, the global commons. Although the suggestion received widespread attention, it was rejected at UNCED, and has not since been revived.

¹⁶⁹ Chapter 12, pp. 606–8.

¹⁷⁰ See Timothy Stephens, *International Courts and Environmental Protection* (Cambridge: Cambridge University Press, 2009).

United Nations Specialised Agencies and Related Organisations

The UN specialised agencies and related international organisations were established before environmental matters became an issue for the international community. It is therefore not surprising that none was designed to deal with, or given express competence over, environmental matters, and that consequently the environment has tended to play a somewhat peripheral role in their affairs. Since the specialised agencies were designed to deal with issues of concern to the international community in the post-war period, there are numerous significant gaps in their competence, including in particular energy, mining and transport matters. These gaps have been highlighted by the problem of climate change, which cuts across, and interconnects, many sectoral issues such as energy, transport, food security and fisheries management.

Food and Agriculture Organization (www.fao.org)

The Food and Agriculture Organization (FAO), which is based in Rome, was established in 1945 to collect, analyse, interpret and disseminate information on nutrition, food and agriculture (including fisheries, marine products, forestry and primary forest products), to promote national and international action, and to provide technical and other assistance.¹⁷¹ The FAO is the only specialised agency with an environmental mandate in its constitution, namely to promote the 'conservation of natural resources and the adoption of improved methods of agricultural production'.¹⁷² The FAO Conference and Council may initiate and approve conventions and agreements on food and agriculture,¹⁷³ and the FAO has developed soft law, including the operation with WHO of the World Food Programme,¹⁷⁴ the operation of a Global System on Plant Genetic Resources,¹⁷⁵ the adoption and operation of the 1985 International Code of Conduct on the Distribution and Use of Pesticides,¹⁷⁶ and adoption of the Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources.¹⁷⁷ The FAO also established (with WHO) the Codex Alimentarius Commission (discussed below). Additionally, the FAO has sponsored numerous international treaties¹⁷⁸ and created a number of international organisations in, for example, the fields of fisheries,¹⁷⁹ plant protection,¹⁸⁰ forest research¹⁸¹ and locust control.¹⁸² It has addressed forest issues, establishing the Tropical Forestry

¹⁷¹ Constitution, Art. I. ¹⁷² Art. I(2)(c). ¹⁷³ Art. XIV.

¹⁷⁴ FAO Conference Res. 1/16 of 24 November 1961; and UNGA Res. 1714 (XVI) (1961). ¹⁷⁵ Chapter 10, p. 426.

¹⁷⁶ Chapter 12, p. 425. In 2013, the code was significantly updated and renamed the International Code of Conduct on Pesticide Management, FAO Conference Res. 3/2013 of 22 June 2013.

¹⁷⁷ See www.fao.org/news/story/en/item/174909/icode

¹⁷⁸ Seventeen such conventions or agreements have been approved under Art. XIV of the FAO Constitution, for example, the 1998 Chemicals Convention (see Chapter 12, pp. 587–9), the 2001 Plant Genetic Resources Treaty (see Chapter 10, pp. 424ff.) and the 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (see Chapter 11, pp. 545–6).

¹⁷⁹ 1949 Agreement for the Establishment of a General Fisheries Council for the Mediterranean; 1969 Convention on the Conservation of the Living Resources of the Southeast Atlantic; 2001 Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean; 2006 Southern Indian Ocean Fisheries Agreement; 2009 Agreement on the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission.

¹⁸⁰ 1951 Convention for the Establishment of the European and Mediterranean Plant Protection Organization; 1951 International Plant Protection Convention; 1956 Plant Protection Agreement for the South-East Asia and Pacific Region.

¹⁸¹ 1959 Agreement for the Establishment on a Permanent Basis of a Latin American Forest Research and Training Institute; 2000 Desert Locust Commission.

¹⁸² 1963 Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Eastern Region of Its Distribution Area in South-West Asia; 1965 Agreement for the Establishment of a Commission for Controlling the

Action Plan in 1985,¹⁸³ and more recently partnering with UNEP and UNDP in the UN-REDD Programme.¹⁸⁴ The FAO convenes international conferences which have led to the adoption and development of international action plans and strategies, some of which have subsequently led to binding international obligations. Examples include the 1981 World Soil Charter,¹⁸⁵ the 1984 World Soil Policy and Plan of Action,¹⁸⁶ the 1991 Strategy and Agenda for Action for Sustainable Agriculture and Rural Development,¹⁸⁷ the 1995 World Food Summit, the 2009 World Summit on Food Security and the 2013 Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources.¹⁸⁸ Other international plans of action of importance to the environment are the 1999 Plans of Action on seabirds, sharks and fishing capacity, the 2001 Plan of Action on illegal, unreported and unregulated fishing,¹⁸⁹ and the 2008 Plan of Action on a reform agenda within the organisation.¹⁹⁰ The 2013 Reviewed Strategic Framework of the FAO includes several environmentally relevant strategic objectives such as increasing and improving the provision of goods and services from agriculture, forestry and fisheries in a sustainable manner, and increasing the resilience of livelihoods to threats and crises.¹⁹¹

United Nations Educational, Scientific and Cultural Organization (www.unesco.org)

The United Nations Educational, Scientific and Cultural Organization (UNESCO), which is based in Paris, was established in 1945 to contribute to peace and security by promoting international collaboration through education, science and culture, including the conservation and protection of historic and scientific monuments and recommending necessary international conventions.¹⁹² UNESCO played a role in convening and hosting the 1948 UNCCUR and has established institutions and programmes such as the Intergovernmental Oceanographic Commission in 1960, and the Man and the Biosphere Programme (under which the Lima Action Plan for UNESCO's Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves 2016–2025 was adopted).¹⁹³ UNESCO was responsible for the adoption of, and performs secretariat functions for, the 1971 Ramsar Convention, the 1972 World Heritage Convention¹⁹⁴ and the 2001 Convention on the Protection of Underwater Cultural Heritage.¹⁹⁵

Desert Locust in the Near East; and 1970 Agreement for the Establishment of a Commission for Controlling the Desert Locust in North-West Africa.

¹⁸³ FAO's leadership of this Action Plan attracted serious criticism and the Plan itself was widely considered to have failed.

¹⁸⁴ www.un-redd.org; see also Chapter 8, p. 315. ¹⁸⁵ Chapter 10 p. 432. ¹⁸⁶ Chapter 10, p. 432.

¹⁸⁷ *Ibid.*, p. 426. ¹⁸⁸ See www.fao.org/news/story/en/item/174909/icode

¹⁸⁹ FAO, *International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries International Plan of Action for the Conservation and Management of Sharks* (1999); FAO, *International Plan of Action for the Management of Fishing Capacity* (1999); and FAO, *International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing* (2001).

¹⁹⁰ FAO Conference Res. 1/2008, *Report of the Thirty-Fifth (Special) Session of the Conference*, C 2008/REP (Rome, 18–21 November 2008).

¹⁹¹ FAO, Reviewed Strategic Framework, C2013/7, 38th Session, Rome 15–22 June 2013.

¹⁹² Constitution, Art. I(2)(c).

¹⁹³ UNESCO, Lima Action Plan for UNESCO's Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves as adopted by the 28th MAB ICC on 19 March 2016, Lima, Peru. See generally B. Von Droste, 'UNESCO's Man and the Biosphere Programme: Two Decades of Sustainable Development', 2 *Colorado Journal of International Environmental Law and Policy* 295 (1991); Chapter 10, p. 392; and Chapter 2, p. 29.

¹⁹⁴ Chapter 10, pp. 422–4. ¹⁹⁵ *Ibid.*, p. 422.

International Maritime Organization (www.imo.org)

The International Maritime Organization (IMO, formerly known as the Intergovernmental Maritime Consultative Organization) is based in London and was established in 1948. Its objectives, which originally did not refer to marine pollution, include: the provision of machinery for cooperation among governments on regulation and practice relating to technical matters of all kinds affecting shipping engaged in international trade; encouraging the general adoption of the highest practical standards in matters concerning maritime safety; and ensuring the efficiency of navigation and the prevention and control of marine pollution from ships.¹⁹⁶ IMO activities relating to marine pollution are mainly carried out through the Legal Committee and the Marine Environment Protection Committee (MEPC), established by the IMO Assembly in 1975.¹⁹⁷ The MEPC has broad powers to consider any matter to do with the prevention and control of marine pollution from ships, including the power to propose regulations and develop recommendations and guidelines.¹⁹⁸ The IMO has supported the negotiation and conclusion of a number of important environmental treaties, for which it provides secretariat functions. These relate to oil pollution,¹⁹⁹ pollution from ships,²⁰⁰ civil liability and compensation for oil pollution and other damage,²⁰¹ emergency preparedness;²⁰² control and management of ships' ballast water and sediments;²⁰³ and the environmentally sound recycling of ships.²⁰⁴ The IMO also acts as secretariat to the London Convention and Protocol and has contributed to soft law by adopting non-binding guidelines, standards and codes relating to maritime safety and the protection of the marine environment.²⁰⁵

¹⁹⁶ Constitution, Art. 1(a), as amended.

¹⁹⁷ Assembly Res. A.358 (1975); L. de la Fayette, 'The Marine Environment Protection Committee: Conjunction of the Law of the Sea and International Environmental Law', 16 *International Journal of Marine and Coastal Law* 163 (2001).

¹⁹⁸ Constitution, Part IX, Arts. 38–42.

¹⁹⁹ 1954 International Convention for the Prevention of Pollution of the Sea by Oil; 1969 High Seas Intervention Convention (and a 1973 Protocol); see Chapter 11, pp. 486ff.

²⁰⁰ MARPOL 73/78; 2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ships; see Chapter 11, pp. 488–92.

²⁰¹ 1992 CLC (Chapter 16, pp. 779–81); 1992 Fund Convention (Chapter 16, pp. 781–3); 1996 HNS Convention and Protocol (Chapter 16, pp. 792–3); the 2001 Bunker Liability Convention (Chapter 16, pp. 788–9); 2007 Nairobi International Convention on the Removal of Wrecks (Kenya) 18 May 2007, in force 14 April 2015, IMO Doc. LEG/CONF. 16/19.

²⁰² 1990 Oil Pollution Preparedness Convention; 2000 Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances; see Chapter 11, pp. 503–4.

²⁰³ International Convention for the Control and Management of Ships' Ballast Water and Sediments (London), 13 February 2004, not in force, IMO Doc. BWM/CONF/36; see Chapter 11, p. 494.

²⁰⁴ International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong), 11 May 2009, not in force, IMO Doc. SR/CONF/45; see Chapter 11, p. 495.

²⁰⁵ See e.g. the 1997 Guidelines to Assist Flag States in the Implementation of IMO Instruments, Assembly Res. A.847 (20); 2002 Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships (adopted by IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, GESAMP Reports and Studies No. 64); 2005 Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (PSSAs), Assembly Res. A.982(24) (updating the 2002 Guidelines for the Designation of Special Areas under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas, Assembly Res. A.927(22)). There have also been a variety of guidelines developed under the Ballast Water Management Convention (see www.imo.org/en/OurWork/Environment/BallastWaterManagement/Pages/BWMGuidelines.aspx) and Ship Recycling Convention (see www.imo.org/en/OurWork/Environment/ShipRecycling/Pages/Default.aspx).

International Labour Organization (www.ilo.org)

The purposes of the International Labour Organization (ILO), which is based in Geneva and was originally established in 1919, include the protection of workers against sickness, disease and injury arising out of employment, and the adoption of humane conditions of labour.²⁰⁶ To this end, the ILO has adopted a number of conventions which set international standards for environmental conditions in the workplace, including occupational safety and health,²⁰⁷ as well as numerous non-binding recommendations and guidelines.²⁰⁸

World Meteorological Organization (www.wmo.int)

The World Meteorological Organization (WMO) was established in 1947 and is based in Geneva. Its purposes are to: facilitate worldwide cooperation in meteorological observation and hydrological and other geophysical observations related to meteorology; promote the establishment and maintenance of meteorological centres and the rapid exchange of meteorological information; promote the standardisation and uniform publication of observations and statistics; and encourage research and training.²⁰⁹ The WMO operates the World Weather Watch Programme,²¹⁰ the World Climate Programme,²¹¹ the World Climate Research Programme,²¹² the Global Atmospheric Watch Programme,²¹³ and the Disaster Risk Reduction Programme.²¹⁴ The World Climate Programme supports the Global Climate Observing System (GCOS), which is sponsored jointly by the WMO, UNESCO's International Oceanographic Commission, UNEP and the International Council for Science (ICSU).²¹⁵ The Global Atmosphere Watch Programme (GAW) provides scientific data and information on the chemical composition of the atmosphere, its natural and anthropogenic change, and interactions between the atmosphere, the oceans and the biosphere. The GAW is the principal vehicle for the WMO's involvement in the GCOS.

²⁰⁶ Constitution, Preamble.

²⁰⁷ 1960 Ionising Radiations Convention; 1971 Benzene Convention; 1977 Occupational Hazards Convention; 1981 Occupational Safety Convention; 1985 Occupational Health Services Convention; 1986 Asbestos Convention; 1990 Chemicals Convention; 1993 Prevention of Major Industrial Accidents Convention; and 2001 Safety and Health in Agriculture Convention. See Chapter 12, pp. 509–11.

²⁰⁸ *Fundamental Principles of Occupational Health and Safety* (2008, 2nd edn); 2005 ILO Code of Practice on Safety and Health in Ports; 2009 ILO Code of Practice on Safety and Health in Underground Coal Mines; and 2011 ILO Code of Practice on Safety and Health in Agriculture.

²⁰⁹ Constitution, Art. 2.

²¹⁰ The World Weather Watch provides up-to-the-minute worldwide weather information through member-operated observation systems and telecommunications links.

²¹¹ The objectives of the World Climate Programme are: to improve the understanding of climate processes for determining the predictability of climate, including its variability and change, identifying the extent of human influence on climate and developing the capability for climate prediction and projection; promote comprehensive observation of the global climate system and facilitate the effective collection and management of climate data and the monitoring, including the detection and assessment of climate variability and changes from global to local scales; enhance and promote the availability of and access to user-targeted climate services, especially prediction, by providing an international framework and establishing the operational elements of production and delivery systems for climate services; foster the effective application of climate knowledge and information for the better management of the risks of climate variability and change into planning, policy and practice and the provision of the required climate services; promote capacity development, particularly in developing and least developed countries, to enable them to contribute to the operation of GFOS and at the same time benefit from it.

²¹² For more information, see www.wcrp-climate.org

²¹³ For more information, see www.wmo.int/pages/prog/arep/gaw/gaw_home_en.html

²¹⁴ For more information, see www.wmo.int/pages/prog/drr/index_en.html

²¹⁵ Results from the GCOS have underpinned the periodic reports of the Intergovernmental Panel on Climate Change. See e.g. *Status of the Global Observing System for Climate (GCOS-195)* (2015).

In 1988, the WMO, with UNEP, established the Intergovernmental Panel on Climate Change (IPCC), an intergovernmental body providing scientific, technical and socio-economic advice on climate change issues.²¹⁶ WMO also contributed to the establishment of the legal regimes for ozone depletion, climate change and transboundary atmospheric pollution.

International Civil Aviation Organization (www.icao.int)

The International Civil Aviation Organization (ICAO), based in Montreal, was established in 1947. Its objectives include the promotion of safe, efficient and economical air transport and generally the development of all aspects of international civil aeronautics.²¹⁷ To that end, it has adopted several relevant instruments, including international standards and recommended practices on aircraft engine emissions and on noise pollution.²¹⁸ Like many of the UN specialised agencies, the ICAO is playing an increasing role in climate change governance, with contributions particularly in the area of regulating emissions from international aircraft.²¹⁹

UN Industrial Development Organization (www.unido.org)

The UN Industrial Development Organization (UNIDO), based in Vienna, was established in 1966.²²⁰ Its objectives include the promotion and acceleration of inclusive and sustainable industrial development in developing countries and economies in transition.²²¹ In recent years, UNIDO has assumed an enhanced role in the sustainable development area by focusing its priorities around three themes: creating shared prosperity, advancing economic competitiveness and safeguarding the environment. Under this latter theme, UNIDO has played an important role in promoting energy efficiency and the uptake of renewable energy technologies, and provides assistance to member states in the areas of resource-efficient and low-carbon industrial production; clean energy access for productive use; and capacity-building for the implementation of multilateral environmental agreements.

World Health Organization (www.who.int)

The World Health Organization (WHO) was established in 1946 to ensure 'the attainment by all peoples of the highest possible level of health'.²²² It is based in Geneva. The WHO Assembly can adopt conventions or agreements for any matters within the competence of the organisation,²²³ as well as regulations on sanitary and quarantine requirements, and on the safety standards, advertising and labelling of biological, pharmaceutical and similar products placed on international markets.²²⁴ It may also make recommendations,²²⁵ and non-binding standards have been adopted for drinking water and air quality.²²⁶ In 1990, the WHO established the WHO

²¹⁶ See further www.ipcc.ch and discussion in Chapter 8, pp. 297ff. ²¹⁷ Constitution, Art. 44(d) and (i).

²¹⁸ Arts. 37 and 38; see Chapter 8, pp. 332–3.

²¹⁹ Following the publication of the IPCC's *Special Report on Aviation and the Global Atmosphere* (1999), the ICAO Assembly requested the development of an ICAO carbon dioxide emissions standard ICAO A/Res. A37-19 (2010). While this standard has not yet been finalised, the organisation has recently developed a global offsetting scheme for aviation emissions: see further Chapter 8, pp. 332–3.

²²⁰ UNGA Res. 2152 (XXI) (17 November 1966).

²²¹ The present mandate of the organisation is set out in the Lima Declaration, adopted by the 15th UNIDO General Conference, Lima, Peru, December 2013, available at www.unido.org/en/who-we-are/unido-in-brief.html

²²² Constitution, Art. 1. ²²³ Art. 19. ²²⁴ Art. 21; 1969 International Health Regulations. ²²⁵ Art. 23.

²²⁶ 2011 Guidelines for Drinking Water Quality (4th edn), www.who.int/water_sanitation_health/publications/2011/dwq_guidelines/en; 2005 Air Quality Guidelines, www.who.int/phe/health_topics/outdoorair_aqg/en and 2014 Indoor Air Quality Guidelines: Household Fuel Combustion, www.who.int/indoorair/guidelines/hhfc/en

Commission on Health and Environment, which played a key role in ensuring that environmental health considerations were incorporated in Agenda 21. In 1993, the WHO Assembly requested an advisory opinion from the International Court of Justice on the legality of the use of nuclear weapons, in the context of its work on the effects of nuclear weapons on health and the environment.²²⁷

The WHO, together with the FAO, is responsible for the Food Standards Programme, which is administered by the Codex Alimentarius Commission.²²⁸ The Codex Alimentarius Commission was established in 1963 with the purpose of making proposals to the FAO and the WHO on all matters relating to the implementation of the Joint FAO/WHO Food Standards Programme, the purposes of which are: to protect the health of consumers and to ensure fair practices in the food trade; to promote the coordination of all food standards work undertaken by international governmental and non-governmental organisations; to guide the preparation of and finalise standards and, after acceptance by governments, to publish them in a Codex Alimentarius either as regional or worldwide standards; and to amend published standards in the light of developments.²²⁹ Over 180 states are members of the Commission, which has adopted commodity standards and general standards for a very large number of foodstuffs, including in relation to additives, pesticide residues, genetically modified foods and labelling. The Commission has also developed influential Working Principles for Risk Analysis based upon a three-tiered process of risk assessment, risk management and risk communication.²³⁰ In varying degrees, the Codex standards are recognised and applied in international trade regimes, including by the WTO, NAFTA, the EU, APEC and MERCOSUR.

International Atomic Energy Agency (www.iaea.org)

The International Atomic Energy Agency (IAEA), which is based in Vienna, was established in 1956 to develop the peaceful uses of atomic energy.²³¹ Over time, the IAEA has taken on a more regulatory function with respect to nuclear energy, through the development of health and safety standards.²³² The IAEA is autonomous and not formally a specialised agency of the United Nations, but sends reports to the General Assembly and other UN organs. It is the only member of the UN 'family' dedicated to the energy sector, although its dual promotional and regulatory function appears anomalous.²³³ Under the 1963 Treaty on the Non-Proliferation of Nuclear Weapons, the IAEA has responsibilities for safeguarding nuclear materials in non-nuclear-weapon states parties to it. The IAEA has also sponsored, and provides secretariat functions for, international conventions relating to liability,²³⁴ the protection of nuclear material,²³⁵ nuclear accidents,²³⁶ the safety of nuclear installations,²³⁷ and the safety of spent fuel and

²²⁷ Chapter 5, p. 167 (the ICJ's opinion was that the request fell outside the competence of the organisation).

²²⁸ See www.codexalimentarius.org; Chapter 12, p. 579. ²²⁹ Statute, Art. 1.

²³⁰ FAO/WHO Food Standards Programme, *Codex Alimentarius Commission: Procedural Manual* (2015, 23rd edn), 108ff.

²³¹ Constitution, Art. II. ²³² Chapter 12, p. 595.

²³³ Another, non-UN international organisation in the energy field is the International Renewable Energy Agency, which was established in 2009 to promote the widespread and increased adoption and sustainable use of all forms of renewable energy. Its founding statute entered into force on 8 July 2010.

²³⁴ 1963 IAEA Civil Liability Convention, Protocol and Supplementary Convention; Chapter 16, pp. 775–8.

²³⁵ 1980 Convention on the Physical Protection of Nuclear Material, as amended; Chapter 12, p. 594.

²³⁶ 1986 Convention on Early Notification of a Nuclear Accident, and the 1986 Convention on Assistance in the Event of Nuclear Accident or Radiological Emergency; Chapter 12, p. 599.

²³⁷ 1994 Convention on Nuclear Safety; Chapter 12, pp. 595–6.

radioactive waste management.²³⁸ The IAEA has also adopted numerous non-binding standards and recommendations on basic safety standards relating to, inter alia, radioactive discharges into the environment²³⁹ and the disposal and transboundary movement of radioactive wastes.²⁴⁰

World Bank, International Monetary Fund, and World Trade Organization

The World Bank (comprising the International Bank for Reconstruction and Development (IBRD),²⁴¹ the International Development Association (IDA)²⁴² and the International Finance Corporation (IFC)),²⁴³ the International Monetary Fund (IMF)²⁴⁴ and the World Trade Organization (WTO)²⁴⁵ are central players in international environmental law. The WTO and its activities are considered in detail in Chapter 18.

The World Bank, along with the six regional development banks,²⁴⁶ has played a particularly important role in the elaboration of rules of international environmental law relating to the provision of financial resources for sustainable development. The World Bank and the regional banks are established by international treaty. As such, and having been endowed by their constituent instruments with certain capacities and functions on the international plane, they have a degree of international personality from which certain consequences flow, such as the power to make treaties and to undertake legal proceedings, and certain privileges and immunities under international law. As international legal persons, the multilateral development banks may also have rights and obligations under international law. In the *Reparations for Injuries* case, the ICJ ruled that the UN was 'a subject of international law and capable of possessing international rights and duties, and that it has the capacity to maintain its rights by bringing international claims'.²⁴⁷ From the Advisory Opinion of the ICJ, it is clear that the multilateral development banks will have a sufficient degree of international personality to subject them to certain duties under international law, including duties which arise under the operation of general and specific

²³⁸ Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997).

²³⁹ Regulatory Control of Radioactive Discharges to the Environment (2000), Safety Guide No. WS-2-G.3.

²⁴⁰ IAEA's Published Safety Standards for Radioactive Waste Management are available at www-ns.iaea.org/standards/documents/topics.asp?sub=170

²⁴¹ The IBRD was established in 1945 to promote the international flow of financial resources for productive purposes and to assist in the reconstruction of states after the Second World War. Its Articles of Agreement do not include any provisions specifically referring to environmental protection objectives or to the sustainable or rational use of natural resources. Its main objective today is to provide financial support, usually in the form of loans, for productive projects or to finance reform programmes that will lead to economic growth in its less developed member countries.

²⁴² The IDA was established in 1959 to promote economic development in the least developed countries by providing finance on more concessionary terms than the conventional loans provided by the IBRD. The IDA finances projects and reform programmes in countries that would otherwise not be able to service loans from the IBRD. It also provides grants to countries at risk of debt distress.

²⁴³ The IFC was established in 1956, and became a specialised agency of the UN in 1957. The IFC is affiliated to the IBRD but has separate legal personality and maintains its capital separately from the IBRD. The IFC invests in private or partly governmental enterprises together with private investors, with a commitment to providing finance in the private sector. Three other associated organisations are based within the World Bank: the Consultative Group on International Agricultural Research (CGIAR); the International Centre for the Settlement of Investment Disputes (ICSID) (see Chapter 18, p. 904); and the Multilateral Investment Guarantee Agency (MIGA) (see Chapter 18, p. 916). In 1990, the Global Environment Facility was established by the World Bank, UNEP and UNDP.

²⁴⁴ www.imf.org ²⁴⁵ www.wto.org

²⁴⁶ African Development Bank (www.afdb.org/en); Inter-American Development Bank (www.iadb.org); Asian Development Bank (www.adb.org); Caribbean Development Bank (www.caribank.org); Islamic Development Bank (www.isdb.org); and the European Bank for Reconstruction and Development (EBRD) (www.ebrd.com).

²⁴⁷ *Reparation for Injuries Suffered in the Service of the United Nations*, Advisory Opinion (1949) ICJ Reports 174.

rules of international environmental law. Multilateral development banks are under an obligation to comply with general principles of international law relating to the protection of the environment, and any failure to comply with such obligations might entail their international responsibility, as well as liability for damages.²⁴⁸

The World Bank group provides financial support for a wide range of projects, some of which have had notorious adverse environmental consequences. Large infrastructure projects, particularly relating to energy, transport and other infrastructure, such as the construction of the Polonoroeste dam in Brazil, have often resulted in significant environmental damage at the national and regional levels.²⁴⁹ Smaller-scale projects, including in particular those relating to agriculture, transportation and energy, have also been criticised for failing to take into account long-term environmental costs, and for contributing to environmental degradation and unsustainable development in developing countries.

In 1980, largely as a result of strong criticism targeted at their environmentally unsound lending activities, the World Bank, five of the regional development banks, the EU, the OAS, UNEP and UNDP adopted a Declaration of Environmental Policies and Procedures Relating to Economic Development.²⁵⁰ The Declaration reaffirmed their support for the principles and recommendations of the Stockholm Conference and agreed to institute procedures for the 'systematic examination' of all development activities under consideration for financing to ensure that appropriate measures were proposed for compliance with the Stockholm instruments. They also undertook to provide technical assistance to developing countries on environmental matters, and, if appropriate, to support project proposals that protect, rehabilitate or otherwise enhance the human environment.²⁵¹ This early commitment to achieving environmental protection is now reflected in more detailed requirements forming part of the internal laws of multilateral development banks and other funding agencies.

The World Bank has an Environment Department and in 2012 released its 'Environmental Strategy 2012–2022' focused on 'clean, green and resilient' development pathways.²⁵² Since the early 1980s, the Bank has also adopted a wide variety of Operational Policies (formerly Operational Directives) related to the environment. These include Policies on involuntary resettlement,²⁵³ indigenous people,²⁵⁴ environmental assessment,²⁵⁵ Environmental Action Plans,²⁵⁶ agricultural pest management,²⁵⁷ natural habitats,²⁵⁸ forests,²⁵⁹ the safety of dams,²⁶⁰ water resources management,²⁶¹ physical cultural resources,²⁶² projects on international

²⁴⁸ Chapter 16, pp. 737ff. This possibility is important in the context of the attention which has been given to the development lending activities of multilateral development banks that have contributed to environmental despoliation and which have led to the adoption of measures to limit and prevent the adverse effects of their activities, including requirements for environmental impact assessment and environmental audits. Other, emerging approaches to dealing with the potential liability of the multilateral lender for the adverse environmental consequences of its activities include the use of 'environmental covenants' (see G. Rose, 3 *Yearbook of International Environmental Law* 545 (1992)) and agreements channelling liability to the recipient.

²⁴⁹ See B. Rich, 'The Multilateral Development Banks, Environmental Policy and the United States', 12 *Ecology Law Quarterly* 681 at 705 (1985); see generally P. Le Prestre, *The World Bank and the Environment Challenge* (London: Associated University Presses, 1989).

²⁵⁰ 1 February 1980, 19 ILM 524 (1980). ²⁵¹ Paras. 3 and 4.

²⁵² World Bank Group, 'Toward a Clean, Green, Resilient World for All: A World Bank Group Environmental Strategy for 2012–2022', 1 January 2012, at www.worldbank.org/en/topic/environment/publication/environment-strategy-toward-clean-green-resilient-world

²⁵³ Operational Policy (OP) 4.12 (as amended). ²⁵⁴ OP 4.10 (as amended).

²⁵⁵ OP 4.01 (as amended). See Chapter 14, pp. 675–6. ²⁵⁶ OP 4.02 (as amended). ²⁵⁷ OP 4.09 (as amended).

²⁵⁸ OP 4.04 (as amended). ²⁵⁹ OP 4.36 (as amended). ²⁶⁰ OP 4.37. ²⁶¹ OP 4.07. ²⁶² OP 4.11.

waterways,²⁶³ and rapid response to crises and emergencies.²⁶⁴ The Bank has also established a large number of funds and facilities with environment-related purposes, particularly in the area of so-called 'carbon financing'.²⁶⁵ Examples include the Community Development Carbon Fund (providing financing for projects in the poorest countries that combine community development attributes with greenhouse gas emission reductions), the Partnership for Market Readiness (providing financing to developing countries to build their capacity to scale up national mitigation efforts) and the Forest Carbon Partnership Facility (providing funds towards capacity-building designed to assist developing countries in reducing emissions from deforestation and forest degradation).

Cooperative Arrangements

Apart from the subsidiary bodies of the specialised agencies which are referred to above, two other bodies merit special mention on account of their contribution to the negotiation and adoption of international legal instruments: the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)²⁶⁶ and the Intergovernmental Panel on Climate Change (IPCC).²⁶⁷ GESAMP (which is jointly run by the UN, UNEP, FAO, UNESCO, WHO, WMO, IMO, IAEA, UNIDO and UNDP) has a mandate to conduct research and carry out assessments on the state of the marine environment, and to make appropriate recommendations, and has produced numerous reports since 1982.²⁶⁸ In 2001, following completion of an in-depth review of GESAMP, major changes to the operation of the organisation were recommended in order to establish it as 'the world's first choice for marine protection advice and guidance'.²⁶⁹ It is envisaged that the 'new' GESAMP will periodically publish consensus statements on issues regarding the degradation of the marine environment.

The IPCC was established to assess the available scientific information on climate change, to assess the environmental and socio-economic impacts of climate change, and to formulate response strategies. Its efforts are organised under three working groups (Physical Scientific Aspects; Impacts, Vulnerability and Adaptation; and Mitigation Options) and a task force (on National Greenhouse Gas Inventories). It has produced five Assessment Reports on Climate Change (1990, 1995, 2001, 2007 and 2014), contributing to the ongoing intergovernmental negotiations around the 1992 Climate Change Convention, its 1997 Kyoto Protocol, and post-2020 arrangements. The IPCC has also produced a large number of special and methodological reports and technical papers on particular aspects of climate change and mitigation strategies, such as aviation, carbon capture and storage, extreme weather events and land use.

Other Global Institutions

Beyond the activities of the UN and specialised agencies, in law of the sea matters, the 1982 UN Convention on the Law of the Sea (UNCLOS) established two new international institutions which address environmental aspects of the law of the sea. These are the International Tribunal for the Law of the Sea (ITLOS), which has made a significant contribution to maritime

²⁶³ OP 7.50 (as amended). ²⁶⁴ OP 8.00.

²⁶⁵ See generally: www.worldbank.org/en/topic/climatechange/brief/world-bank-carbon-funds-facilities

²⁶⁶ www.gesamp.org ²⁶⁷ www.ipcc.ch

²⁶⁸ Reports of GESAMP are available from www.gesamp.org/publications. See also Chapter 11, p. 455.

²⁶⁹ See 'The New GESAMP: Science for Sustainable Oceans', www.gesamp.org/data/gesamp/files/media/Publications/GESAMP_The_New_GESAMP__Science_for_Sustainable_Oceans/gallery_1043/object_1043_large.pdf

environmental law,²⁷⁰ and the International Seabed Authority, which has promulgated regulations that establish environmental conditions for deep seabed prospecting.²⁷¹

Regional and Subregional Organisations

Regional organisations outside the UN system also play an important role in the development of international environmental law. In application of the principle that different environmental standards could be applied to different geopolitical regions, the role of regional organisations has increased significantly over the past decade. They are frequently able to provide the flexibility needed to accommodate special regional concerns, as was recognised by the Brundtland Report's call for regional organisations to do more to integrate environmental concerns into their activities. The regional rules of international environmental law and institutional arrangements are particularly well developed in the Arctic and Antarctic regions; accordingly, organisations related to those developments are considered in more detail in Chapter 13.

Some international organisations are not regional, in a strict geographic sense, and are not UN agencies, bodies or programmes. These include the Commonwealth Secretariat, the Organisation of Islamic Cooperation, the Arab League (whose members are in Africa and Asia) and the Organization of Petroleum Exporting Countries (OPEC). While each maintains an interest in environmental matters, none has adopted rules of international environmental law or ensured their enforcement, although they provide assistance to states on environmental matters.

Europe and the OECD

In the European context, apart from the EU, three organisations play an important role in the development of regional rules: the Council of Europe, the Organization for Economic Co-operation and Development (OECD) and the Organization for Security and Cooperation in Europe (OSCE). The European Bank for Reconstruction and Development (EBRD) has emerged as an innovative contributor to European environmental law and policy; it is noteworthy, in a broader global context, as the first multilateral development bank to have a constituent instrument which expressly requires it to fulfil environmental protection and sustainable development objectives.²⁷²

OECD (www.oecd.org)

The OECD (formerly the Organization for European Economic Co-operation, OEEC) was established in 1960 to promote policies designed to achieve in its member countries the highest sustainable economic growth, sound economic expansion in the process of economic development, and the expansion of world trade.²⁷³ Increasingly, the membership of the OECD extends beyond Europe giving it global reach: nine of its thirty-four members are not European states.²⁷⁴ In addition, the OECD has offered 'enhanced engagement' to Brazil, China, India, Indonesia and

²⁷⁰ Chapter 5, pp. 184–5. ²⁷¹ Chapter 11, pp. 497–8.

²⁷² See further 23 ILM 1083 (1990), Art. 1; P. Sands, 'Present at the Creation: A New Development Bank for Europe in the Age of Environment Awareness', 84 *Proceedings of the American Society of International Law* 77 at 88–91 (1990).

²⁷³ Convention on the OECD, Art. 1.

²⁷⁴ Accession discussions are also ongoing with Colombia, Lithuania, Costa Rica and Latvia.

South Africa, and maintains cooperative relations with more than seventy non-member countries.

In 1974, the members of the OECD established an International Energy Agency,²⁷⁵ following the establishment of the Nuclear Energy Agency in 1957.²⁷⁶ The OECD Convention does not specify environmental protection among its functions, but the organisation began to address environmental issues in 1970 following the decision to create an Environment Committee as a subsidiary body to the Executive Committee, which is itself subordinate to the OECD Council. The OECD became involved in environmental issues for three reasons. First, certain environmental issues were recognised to be intrinsically international; second, differences among member countries' environmental standards were considered to have implications for trade and economic and political relations; and, third, it was felt that some member countries might be insufficiently prepared to address certain environmental problems.

The OECD Council may adopt two types of act: decisions, which are binding on its members; and recommendations, which are non-binding. Both acts are usually adopted with the support of all members.²⁷⁷ Since 1972, the OECD Council has adopted a large number of environmental measures, and has promulgated a treaty on liability for nuclear damage.²⁷⁸ These environmental acts have influenced the development of national environmental legislation in the member countries, and have often provided a basis for international environmental standards and regulatory techniques in other regions and at the global level. The OECD Council has frequently been at the forefront of developments in international environmental policy, focusing on the relationship between economic and environmental policies;²⁷⁹ defining and endorsing the 'polluter pays' principle;²⁸⁰ providing early support for the development and use of environmental assessment techniques;²⁸¹ promoting economic instruments;²⁸² endorsing the use of integrated pollution prevention and control,²⁸³ using pollutant release and transfer registers,²⁸⁴ the environmentally sound management of waste,²⁸⁵ 'greening' public procurement;²⁸⁶ and safety testing and assessment of manufactured nanomaterials.²⁸⁷ The OECD Council has also

²⁷⁵ 1974 Agreement on an International Energy Programme Including Establishment of the International Energy Agency, Paris, 18 November 1974, 27 UST 1685 at Chapter IX.

²⁷⁶ EEC Decision of 20 December 1957, subsequently approved by OECD Decision of 30 September 1961.

²⁷⁷ Arts. 5(a) and (b) and 6(1).

²⁷⁸ 1960 Convention on Third Party Liability in the Field of Nuclear Energy and 1963 Supplementary Convention; see Chapter 16, pp. 773–4.

²⁷⁹ 1972 Recommendation Guiding Principles Concerning International Economic Aspects of Environmental Policies, C(72)128; see Chapter 6, pp. 217ff.

²⁸⁰ 1974 Recommendation on the Implementation of the Polluter-Pays Principle, C(74)223; 1989 Recommendation on the Application of the Polluter-Pays Principle to Accidental Pollutions, C(89)88(Final), 28 ILM 1320 (1989); see Chapter 6, pp. 240–1.

²⁸¹ 1974 Recommendation on the Analysis of the Environmental Consequences of Significant Public and Private Projects, C(74)216; 1979 Recommendation on the Assessment of Projects with Significant Impact on the Environment, C(79)116; 1985 Recommendation on Environmental Assessment of Development Assistance Projects and Programmes, C(85)104; Recommendation on Measures Required to Facilitate the Environmental Assessment of Development Assistance Projects and Programmes, C(86)26(Final); see Chapter 14, p. 658.

²⁸² 1991 Recommendation of the Council on Use of Economic Instruments in Environmental Policy, C(90)177(Final); see Chapter 4, p. 132.

²⁸³ 1990 Recommendation on Integrated Pollution Prevention and Control, C(90)164(Final); see Chapter 4, pp. 139–40.

²⁸⁴ 1996 Recommendation on Implementing Pollutant Release and Transfer Registers (PRTRs), C(96)41(Final).

²⁸⁵ 2004 Recommendation on the Environmentally Sound Management of Waste, C(2004)100.

²⁸⁶ 2002 Recommendation on Improving the Environmental Performance of Public Procurement, C(2002)3; Recommendation on Good Practices for Public Environmental Expenditure Management, C(2006)84.

²⁸⁷ 2013 Recommendation on the Safety Testing and Assessment of Manufactured Nanomaterials, C(2013) 107.

supported the broad use of techniques for ensuring the availability of environmental information,²⁸⁸ and for developing cooperation on transfrontier pollution.²⁸⁹ Substantive issues have also been addressed, and the OECD Council has developed a broad range of decisions or recommendations on many sectors of environmental protection, including air quality,²⁹⁰ water quality,²⁹¹ energy,²⁹² waste,²⁹³ chemicals,²⁹⁴ noise,²⁹⁵ tourism²⁹⁶ and multinational enterprises.²⁹⁷

Council of Europe (www.coe.int)

The Council of Europe was established in 1949 to achieve greater unity between members 'for safeguarding and realising their ideals and principles which are their common heritage and

- ²⁸⁸ 1979 Recommendation on Reporting on the State of the Environment, C(79)114; 1991 Recommendation on Environmental Indicators and Information, C(90)165(Final); 1998 Recommendation on Environmental Information, C(98)67(Final); Recommendation on Information and Communication Technologies and the Environment, C(2010)61.
- ²⁸⁹ 1974 Recommendation on Principles Concerning Transfrontier Pollution, C(74)224; 1976 Recommendation on Equal Right of Access in Relation to Transfrontier Pollution, C(76)55; 1977 Recommendation on Implementation of a Regime of Equal Right of Access and Non-Discrimination in Relation to Transfrontier Pollution, C(77)28; 1978 Recommendation on Strengthening International Co-operation on Environmental Protection in Transfrontier Regions, C(78)77(Final).
- ²⁹⁰ 1974 Recommendation on Guidelines for Action to Reduce Emissions of Sulphur Oxides and Particulate Matter from Fuel Combustion in Stationary Sources, C(74)16(Final); 1974 Recommendation on Measures Required for Further Air Pollution Control, C(74)219; 1985 Recommendation on Control of Air Pollution from Fossil Fuel Combustion, C(85)101.
- ²⁹¹ 1971 Recommendation on the Determination of the Biodegradability of Anionic Synthetic Surface Active Agents, C(71)83(Final); 1974 Recommendation on the Control of Eutrophication of Waters, C(74)220; 1974 Recommendation on Strategies for Specific Water Pollutants Control, C(74)221; 1978 Recommendation on Water Management Policies and Instruments, C(78)4(Final).
- ²⁹² 1974 Recommendation on Energy and the Environment, C(74)222; 1976 Recommendation on Reduction of Environmental Impacts from Energy Production and Use, C(76)162(Final); 1977 Recommendation on the Reduction of Environmental Impacts from Energy Use in the Household and Commercial Sectors, C(77)109(Final); 1979 Recommendation on Coal and the Environment, C(79)117; 1985 Recommendation on Environmentally Favourable Energy Options and Their Implementation, C(85)102.
- ²⁹³ 1976 Recommendation on a Comprehensive Waste Management Policy, C(76)155(Final); 1978 Recommendation on the Re-Use and Recycling of Beverage Containers, C(78)8(Final); 1980 Recommendation on Waste Paper Recovery, C(79)218(Final); 1984 Decision and Recommendation on Transfrontier Movements of Hazardous Waste, C(83)180(Final); 1986 Decision/Recommendation on Exports of Hazardous Wastes from the OECD Area, C(86)64(Final); 1991 Decision/Recommendation on Reduction of Transfrontier Movements of Waste, C(90)178(Final); Decision Concerning the Control of Transfrontier Movements of Wastes Destined for Recovery Operations, C(2001)107(Final).
- ²⁹⁴ 1973 and 1987 Decision and Recommendation on Further Measures for the Protection of the Environment by Control of Polychlorinated Biphenyls, C(82)2(Final); 1973 Recommendation on Measures to Reduce All Man-Made Emissions of Mercury to the Environment, C(73)172(Final); 1974 Recommendation on the Assessment of the Potential Environmental Effects of Chemicals, C(74)215; 1979 Recommendation on Guidelines in Respect of Procedures and Requirements for Anticipating the Effects of Chemicals on Man and in the Environment, C(77)97(Final); 1981 Decision on the Mutual Acceptance of Data in the Assessment of Chemicals, C(81)30(Final); 1982 Decision on the Minimum Pre-Marketing Set of Data in the Assessment of Chemicals, C(82)196(Final); 1989 Decision and Recommendation on Compliance with Principles of Good Laboratory Practice, C(89)87(Final); 1983 Recommendation on the Protection of Proprietary Rights to Data Submitted in Notifications of New Chemicals, C(83)96(Final); 1983 Recommendation on the Exchange of Confidential Data on Chemicals, C(83)97(Final); 1983 Recommendation on the OECD List of Non-Confidential Data on Chemicals, C(83)98(Final); 1984 Recommendation on Information Exchange Related to Export of Banned or Severely Restricted Chemicals, C(84)37(Final); 1988 Decisions on the Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage, C(88)84(Final); 1991 Decision on the Co-operative Investigation and Risk Reduction of Existing Chemicals, C(90)163(Final).
- ²⁹⁵ 1985 Recommendation on Strengthening Noise Abatement Policies, C(85)103.
- ²⁹⁶ Recommendation on Environment and Tourism, C(79)115.
- ²⁹⁷ Decision on the OECD Guidelines for Multinational Enterprises, C(2000)96(Final); Recommendation of the Council on Principles of Corporate Governance, C(2015)84.

facilitating their economic and social progress'.²⁹⁸ The Council of Europe now has forty-seven members across the whole of Europe. Without an explicit environmental mandate, the Council of Europe has adopted a number of acts and policies relating to environmental protection through its organs, the Committee of Ministers and the Parliamentary Assembly. The Parliamentary Assembly has adopted many non-binding recommendations on environmental issues.²⁹⁹ The Council of Europe's contributions include several treaties. Apart from an early environmental treaty restricting the use of detergents,³⁰⁰ the Council of Europe has adopted treaties on: the protection of animals;³⁰¹ the protection of archaeological and cultural heritage;³⁰² the conservation of wildlife;³⁰³ transfrontier cooperation;³⁰⁴ civil liability for environmental damage;³⁰⁵ the protection of the environment through criminal law;³⁰⁶ and landscape.³⁰⁷ The European Convention on Human Rights and the European Social Charter, both of which have contributed to environmental jurisprudence and policy, were also adopted under the auspices of the Council of Europe.³⁰⁸

Organization for Security and Co-operation in Europe (www.osce.org)

The Final Act of the 1975 Conference on Security and Co-operation in Europe (CSCE) encompassed cooperation on the protection and improvement of the environment, and the institutions established thereunder may accordingly address matters relating to the environment.³⁰⁹ The 1990 Charter of Paris for a New Europe affirmed the close relationship between economic liberty, social justice and environmental responsibility.³¹⁰ In 1994, the CSCE was renamed the OSCE, and its institutions now comprise a Ministerial Council, a Permanent Council, a Forum for Security Cooperation and a Conflict Prevention Centre.³¹¹ Although the OSCE recognises the close connection between environmental issues and security, so far, its institutions do not appear to have been apprised of a security issue arising out of an environmental conflict, although there was some suggestion that the dispute between Hungary and Slovakia over the Gabčíkovo-Nagymaros Project might be referred to OSCE procedures. OSCE, together with UNEP, UNDP,

²⁹⁸ Statute of the Council of Europe, as amended, Art. 1(a).

²⁹⁹ These relate to, inter alia, general environmental policy (see Recommendations 888 (1980), 910 (1981), 937 (1982), 958 (1983), 998 (1984), 1078 (1988), 1130 (1990), 1131 (1991), 1284 (1996), 1823 (2008)); marine pollution (Recommendations 585 (1970), 946 (1982), 997 (1984), 1003 (1985), 1015 (1985), 1079 (1988), 1388 (1998), 1558 (2002)); fisheries (Recommendations 913 (1981), 825 (1984), 842 (1985), 1320 (1997)); biodiversity and climate change (Recommendations 966 (1983), 978 (1984), 1033 (1986), 1048 (1987), 1918 (2010)); freshwater resources (Recommendations 1052 (1987), 1128 (1990), 1224 (1993)); air pollution (Recommendations 977 (1984), 1006 (1985), 926 (1989)); environment and human rights (Recommendations 1614 (2003), 1862 (2009)); environment and health (Recommendation 1863 (2009)); and noise and light pollution (Recommendation 1947 (2010)).

³⁰⁰ 1968 European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products, Strasbourg, 16 September 1968.

³⁰¹ 1968 European Convention for the Protection of Animals During International Transport.

³⁰² 1969 European Convention on the Protection of the Archaeological Heritage (revised 1992); 2005 Council of Europe Framework Convention on the Value of Cultural Heritage for Society.

³⁰³ 1979 Berne Convention; see Chapter 10, pp. 444–6.

³⁰⁴ 1980 European Outline Convention on Transfrontier Co-operation Between Territorial Communities or Authorities; and Protocols (1995, 1998, 2009).

³⁰⁵ 1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment; see Chapter 16, pp. 799–800.

³⁰⁶ 1998 Convention on the Protection of the Environment Through Criminal Law; see Chapter 16, pp. 761–2.

³⁰⁷ 2000 European Landscape Convention; see Chapter 10, p. 423. ³⁰⁸ Chapter 16, p. 760.

³⁰⁹ 14 ILM 1292 (1975). The ICJ has held that support for the Helsinki Final Act constitutes an expression of *opinio juris* (*Military and Paramilitary Activities in and Against Nicaragua* (1986) ICJ Reports 3 at 100 and 107).

³¹⁰ 30 ILM 190 (1991). ³¹¹ Chapter 5, p. 167.

the UNECE and the Regional Environment Centre, has developed the Environment and Security Initiative, with NATO as an associated partner. This initiative provides a framework for cooperation on transboundary environmental issues and promotes security through environmental cooperation and sustainable development.³¹² The OSCE is also active in the field of good governance, playing an important role in raising public awareness of Europe-wide treaties, such as the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters.

Africa

The principal African organisation that addresses environmental matters is the African Union. Its predecessor, the Organization of African Unity (OAU), was established in 1963 to promote the unity and solidarity of African states and to coordinate interstate cooperation to achieve a better life for the peoples of Africa.³¹³ The Constitutive Act of the African Union, adopted in 2000, articulates similar objectives, but also seeks to promote 'sustainable development at the economic, social and cultural levels'.³¹⁴ The OAU supported the adoption of a treaty on the conservation of nature and natural resources,³¹⁵ and a treaty on the trade in and management of hazardous waste.³¹⁶ The OAU also sponsored the 1981 African Charter on Human and Peoples' Rights³¹⁷ and the 1991 African Economic Community,³¹⁸ both of which have environmental provisions. The African Union has also adopted a number of conventions in the environmental field. These include the Convention of the African Energy Commission (2001), and a revised version of the African Convention on the Conservation of Nature and Natural Resources (2003). Apart from the UN Economic Commission for Africa, other organisations having environmental responsibilities and activities include the African Development Bank,³¹⁹ the Arab Bank for Economic Development in Africa,³²⁰ the Economic Community of Central African States,³²¹ the Economic Community of West African States³²² and the Intergovernmental Authority on Development.³²³ The Southern African Development Community was established in 1992 and has adopted protocols on shared watercourses, wildlife conservation and law enforcement, energy, fisheries, forestry and mining.³²⁴ Regional bodies have also been established to manage shared natural resources.

Americas and the Caribbean

The Organization of American States (OAS), whose purposes include promoting the economic, social and cultural development of its members,³²⁵ has played a limited role in international environmental law. As the successor organisation to the Pan American Union, the OAS has responsibility for the dormant 1940 Western Hemisphere Convention,³²⁶ and has been responsible for the adoption of just one convention, with passing relevance for environmental

³¹² www.envsec.org ³¹³ Charter of the OAU, Art. II(1); www.africa-union.org

³¹⁴ Constitutive Act of the African Union, adopted 7 November 2000 at the Lomé Summit (Togo), entered into force 26 May 2001, Art. 3(j); www.au.int. Reflecting this focus, the African Union established a technical body called the New Partnership for Africa's Development (NEPAD) (www.nepad.org).

³¹⁵ 1968 African Nature Convention; see Chapter 10, p. 438.

³¹⁶ 1991 Bamako Convention; see Chapter 12, pp. 623–4. ³¹⁷ Chapter 17, p. 817. ³¹⁸ Chapter 18, p. 893.

³¹⁹ See www.afib.org/en ³²⁰ See www.badea.org ³²¹ See www.africa-union.org/root/au/recs/eccas.htm

³²² See www.ecowas.int ³²³ See igad.int ³²⁴ For details, see www.sadc.int/documents-publications/protocols

³²⁵ Charter of the OAS, Art. 2(e); www.oas.org ³²⁶ Chapter 10, pp. 441–2.

protection.³²⁷ Other organisations with a higher environmental profile include the Inter-American Development Bank,³²⁸ the Caribbean Development Bank,³²⁹ the Central American Commission on Environment and Development (CCAD),³³⁰ and the American Convention on Human Rights, which – through its San Salvador Protocol – is one of the few such instruments to state expressly that people have a right to a clean and healthy environment.³³¹ Neither the Caribbean Community nor the Organization of Eastern Caribbean States has played a particularly active role, save in the field of fisheries, though these organisations have an increasing focus on sustainable development and clean energy issues. Regional free trade agreements have played a catalytic role in developing regional rules of environmental protection, particularly the Canada–United States Free Trade Agreement and the North American Free Trade Agreement.³³² At the bilateral level, the Canada–United States International Joint Commission, established in 1909, is significant,³³³ and important bilateral arrangements also exist between Mexico and the United States.³³⁴

Asia Pacific

Although not as established as in other regions, the Asia Pacific region has taken significant steps towards developing regional environmental organisations.³³⁵ This has been driven by the rapid industrialisation which is occurring in many countries in the region, the important role of Japan, and the size and significance of China and India, shared environmental problems (particularly climate change and transboundary haze resulting from forest fires) and the need to conserve natural resources. For the most part, developments have focused on giving existing organisations greater environmental competence, and on the relationship between economic commitments (free trade and investment) and environmental standards.

One of the few regional organisations in the Asia Pacific to have made a significant contribution is the Association of Southeast Asian Nations (ASEAN), under whose auspices the 1985 ASEAN Convention and 2002 ASEAN Agreement on Transboundary Haze Pollution were adopted.³³⁶ In 2005, agreement was reached on the establishment of the ASEAN Centre for Biodiversity.³³⁷ The Asian Development Bank integrates environmental considerations into its decision-making process,³³⁸ and the South Asian Association for Regional Co-operation

³²⁷ 1976 Convention on the Protection of the Archaeological, Historical and Artistic Heritage of the American Nations.

³²⁸ The Inter-American Development Bank was established under the auspices of the Economic Conference of the OAS in 1959 to 'contribute to the acceleration of the process of economic and social development of the regional developing member countries' (Washington, 8 April 1959, in force 30 December 1989, 389 UNTS 69 (www.afdb.org)).

³²⁹ The Caribbean Development Bank was established in 1970 under the auspices of UNDP 'to contribute to the harmonious economic growth and development of the member countries in the Caribbean and to promote economic co-operation and integration among them, having special attention and urgent regard to the needs of the less developed member countries of the region' (Kingston, 18 October 1969, in force 26 January 1970, 712 UNTS 217 (www.caribank.org)). Given the vulnerability of the Caribbean region to climate change and other natural disasters, the Bank has designated environmental sustainability, disaster risk management and climate change as key elements in its 2015–19 Strategic Plan.

³³⁰ 1 *Yearbook of International Environmental Law* 229 (1990). ³³¹ Chapter 17, p. 814.

³³² Chapter 18, pp. 887–92. ³³³ Chapter 9, p. 371. ³³⁴ See e.g. Chapter 9, p. 371.

³³⁵ For a history of developments in this region, see B. Boer, R. Ramsay and D. Rothwell, *International Environmental Law in the Asia Pacific* (London: Kluwer, 1998). For more contemporary developments in the region see the *Asia Pacific Journal of Environmental Law*.

³³⁶ Chapter 7, p. 274 and Chapter 10, p. 447. ³³⁷ www.aseanbiodiversity.org

³³⁸ The Asian Development Bank was established in 1965 under the auspices of the predecessor organisation to the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP): Manila, 4 December 1965, in force 22 August 1966, 571 UNTS 123 (www.adb.org). The Bank has adopted environmental safeguard policies for projects

(SAARC)³³⁹ has started to play a more active role in the development of regional rules, particularly on issues of climate change and natural disasters. SAARC's contributions include a 2010 Convention on Cooperation on the Environment,³⁴⁰ and a 2011 Agreement on Rapid Responses to Natural Disasters.³⁴¹ The Trans-Pacific Partnership (TPP) regional trade agreement concluded in 2015 (or any replacement arrangement following the US withdrawal from the TPP) may play a significant future role in shaping environmental protection measures in the region.³⁴²

Regional organisations in the Pacific have generally been more active than their Asian counterparts, including in the negotiation of multilateral environmental agreements.³⁴³ The Pacific Community (formerly the South Pacific Commission) has promulgated at least two treaties for the protection of natural resources.³⁴⁴ At the annual meetings of the Pacific Islands Forum, regional and global environmental issues are high on the agenda, especially concerning sea level rise, climate change and disaster preparedness. The Forum also took decisions that led to the negotiation and adoption of a nuclear-free zone treaty,³⁴⁵ the prohibition of driftnet fishing,³⁴⁶ and the regulation of transboundary shipments of hazardous and radioactive waste.³⁴⁷ The South Pacific Regional Environment Programme (SPREP) became an independent and autonomous regional organisation in 1991, and has adopted a number of action plans, including an Action Strategy for Nature Conservation and Protected Areas in the Pacific Islands Region (2008–12), a Pacific Islands Framework for Action on Climate Change (2006–15) and a Regional Solid Waste Management Strategy (2010–15).

Organisations Established by Environmental Treaties

The third type of organisation is that established by environmental treaty. Most environmental treaties establish institutional arrangements for their implementation, development and review. The institutional arrangements have a variety of names and forms, and have been an increasing focus of scholarly and practical attention over the last decade. They range from the standing Commission established by the 1992 OSPAR Convention (replacing the commissions established by the 1972 Oslo Convention and the 1974 Paris Convention) to the ad hoc Conferences or Meetings of the Parties to a wide range of agreements. Each treaty organisation will also have a secretariat. These institutional arrangements are, in effect, international organisations. They have international legal status, rules of procedure and membership, and have enumerated powers

which are summarised in *Environmental Safeguards: A Good Practice Sourcebook* (Draft Document), December 2012, at www.adb.org/documents/environment-safeguards-good-practice-sourcebook

³³⁹ Charter of SAARC, Dhaka, 8 December 1985 (<http://saarc-sec.org>). ³⁴⁰ In force 23 October 2013.

³⁴¹ Male, 25–26 May 2011, at www.ifrc.org/docs/idrl/N840EN.pdf

³⁴² For the text of the TPP, see <http://dfat.gov.au/trade/agreements/tpp/official-documents/Pages/official-documents.aspx>. Withdrawal of the United States from the TPP under President Trump has thrown the future of the agreement into doubt, though it is likely a new regional treaty will emerge, potentially including China but without the United States.

³⁴³ Pacific island states, together with Caribbean states, are active in the Alliance of Small Island States, in the climate change negotiations.

³⁴⁴ 1976 Apia Convention (at the Eighth Meeting of the Parties in 2006, its operation was suspended until further notice); and 1986 Noumea Convention and Protocols.

³⁴⁵ 1985 Rarotonga Treaty; Chapter 12, p. 601. ³⁴⁶ 1989 Driftnet Convention.

³⁴⁷ 1989 Waigani Convention; see Chapter 12, pp. 624–5.

relating to decision-making and dispute settlement and, occasionally, enforcement powers. A large number of treaty organisations are highly active and have made significant contributions to the development of international environmental law, much of which is not collectively well documented and assessed.³⁴⁸

A detailed list of these organisations is beyond the scope of this section: where appropriate, they are identified and discussed in relevant sections of the book. As will be seen, they may, through their acts, impose obligations on states that range from the legally binding to recommendations with no legal consequences.

NON-STATE ACTORS

Non-state actors have played a central role in developing international environmental law. They remain highly influential. Since the latter half of the nineteenth century, the scientific community and environmental groups have mobilised the forces of public opinion, and have sought to contribute to the progressive development of international law. The corporate sector has also fought to ensure that its voice is heard, especially as international rules have expanded and touched directly upon industrial and other economic activities. At the international level, non-state actors play a formal role in several ways. They identify issues requiring international legal action; they participate as observers in international organisations, and in treaty negotiations; and they participate, formally and informally, in the national and international implementation of principles and rules adopted at the regional and global levels.

Over the past few decades, at least six categories of non-state actors have emerged as important actors: the scientific and technological community; non-profit-making environmental groups and associations (NGOs); private companies and business concerns; legal organisations and the academic community; workers and trade unions; and individuals and community groups, including indigenous peoples' organisations.³⁴⁹ The Rio Declaration and Agenda 21 affirmed the important partnership role of non-governmental organisations and called for their 'expanded role'.³⁵⁰ This was a theme reaffirmed in the outcome document from the Rio+20 Summit, *The Future We Want*, which underscored 'that broad public participation and access to information and judicial and administrative proceedings are essential to the promotion of sustainable development'.³⁵¹ It also declared that sustainable development:

requires the meaningful involvement and active participation of regional, national and sub-national legislatures and judiciaries, and all Major Groups: women, children and youth, indigenous peoples, non-governmental organizations, local authorities, workers and trade unions, business and industry, the scientific and technological community, and farmers, as well as other stakeholders, including local communities, volunteer groups and foundations, migrants, families as well as older persons and persons with disabilities.

³⁴⁸ K. O'Neill, 'Architects, Agitators, and Entrepreneurs', in R. S. Axelrod and S. D. VanDeveer (eds.), *The Global Environment: Institutions, Law and Policy* (Los Angeles, CA: CQ Press, 2015, 4th edn) 26.

³⁴⁹ Agenda 21, Section III, entitled 'Strengthening the Role of Major Groups', identifies the following 'major groups': women, children and youth, indigenous people, non-governmental organisations, local authorities, workers and trade unions, business and industry, the scientific and technological community, and farmers.

³⁵⁰ Agenda 21, paras. 38.42–38.44. ³⁵¹ *Future We Want*, para. 43.

Non-state actors have for many years been able to participate as observers in the activities of international organisations, such rights being granted expressly in the treaty establishing the organisation, or by its rules of procedures, or by practice. The 1992 OSPAR Convention included, for the first time, a treaty provision for observers that does not distinguish between states, international governmental organisations and non-governmental organisations with respect to the conditions of the granting of observer status, save that the non-governmental organisations must carry out activities that are related to the Convention.³⁵² Even more far-reaching is the 1998 Aarhus Convention that entitles non-governmental organisations to participate in the Meeting of the Parties and – uniquely – to nominate candidates for election to the Convention’s implementation committee.³⁵³

Scientific Community³⁵⁴

Often, the driving force behind international environmental law is science, a feature that distinguishes this from other areas of public international law where developments are frequently initiated by political, economic or commercial imperatives. The important place for science introduces an objective element over which governments have less control. As one commentator noted, this has two effects: the ‘environmental movement has been powerfully affected by the consequences of science misused to the detriment of the living world, but even more importantly by what advancing science has revealed about the structure and process of nature’.³⁵⁵ Non-state actors rely upon scientific evidence generated from different sources, including that which emerges from international processes such as the IPCC and GESAMP, from government departments and from non-state sources. The last-mentioned have long played a role in the development of international environmental law. Early efforts leading to international legal developments included the work of individual members of the scientific community in the eighteenth century and the scientific congresses of the late nineteenth century.³⁵⁶ Today, the principal coordinating force for the non-governmental activities of individual researchers and academics, and university and commercial research centres and institutes, is the International Council for Science (formerly the International Council for Scientific Unions (ICSU)), a coordinating federation of thirty-one constituent unions together with representation from 122 national scientific bodies representing 142 countries.³⁵⁷ ICSU interdisciplinary bodies address particular issues, of which the following have been among the more influential: the Scientific Committees on Oceanic Research (SCOR, 1957), on Space Research (COSPAR, 1958), on Antarctic Research (SCAR, 1958) and on Problems of the Environment (SCOPE, 1969).³⁵⁸ SCOPE serves as a non-governmental, interdisciplinary and international council of scientists, and provides advice for governments and non-governmental bodies on environmental problems.

³⁵² Art. 11(1). Once observer status has been granted, each observer appears to have identical rights, namely to present to the Commission any information or reports relevant to the objectives of the Convention but not the right to vote (Art. 11(2)). Under Art. 11(3), conditions for admission and participation are set out in the Rules of Procedure of the OSPAR Commission: Criteria and procedures governing observership of Non-governmental Organisations at meetings within the framework of the OSPAR Commission (Agreement 2013-02). Other similar examples include the 2003 Pollutant Release and Transfer Register Protocol, Art. 17(5); and the Nagoya Protocol, Art. 26(8).

³⁵³ 1998 Convention, Art. 10(5); Meeting of the Parties, Decision I/7, Annex, para. 4 (2002).

³⁵⁴ Agenda 21, Chapter 31.

³⁵⁵ L. K. Caldwell, *International Environmental Policy* (Durham, NC/London: Duke University Press, 1990, 2nd edn), 9.

³⁵⁶ *Ibid.*, 32. ³⁵⁷ www.icsu.org/about-icsu/about-us ³⁵⁸ Caldwell, *International Environmental Policy*, 114.

It is often through the activities of environmental organisations that this scientific work is brought to the attention of governments and international organisations, supporting calls for further international action and providing the basis for political lobbying in intergovernmental negotiating fora.

Environmental, Health and Developmental Organisations³⁵⁹

Internationally, a number of environmental, health and developmental organisations have played a particularly important role in developing and implementing international environmental law. The International Union for the Conservation of Nature (IUCN), established in 1948, has developed policy initiatives and has prepared texts of draft instruments which served as the basis for the negotiation of the 1971 Ramsar Convention, the 1973 CITES and the 1992 Biodiversity Convention. Together with UNEP and WWF, IUCN was also instrumental in drawing up the 1980 World Conservation Strategy and the 1990 World Conservation Strategy II. WWF, Greenpeace, Conservation International, and Friends of the Earth are other international non-governmental organisations that have played an active role in developing treaty language and other international standards, and in acting as watchdogs in the implementation of treaty commitments, together with groups such as Oxfam and Action Aid.³⁶⁰ This extends to the filing of international cases, where rules permit,³⁶¹ or intervening as friends of the court.³⁶² Grass-roots environmental and consumer organisations have also influenced the development of international environmental law, including through domestic litigation. Often, they participate in global networks which focus on specific issues, such as the Climate Action Network and the Pesticides Action Network; similar global networks have been established to address environmental issues relating to matters such as regional and international trade negotiations, as well as policies and projects funded by the multilateral development banks. At each of the global environmental summits (UNCED, WSSD and Rio+20), large groups of non-governmental organisations held parallel conferences and prepared their own draft instruments on a range of international legal issues relating to sustainable development and its implementation.

In comparison with 'advocacy' NGOs that are prominent in international environmental negotiations, 'operational' NGOs seek to 'fund, design or implement development-related programs or projects'.³⁶³ This category of NGOs has a growing role: examples include TRAFFIC, the global wildlife trade monitoring network,³⁶⁴ and the International POPs Elimination Network (IPEN), which is a network of public interest groups in over one hundred countries focused on taking action internationally to minimise and eliminate hazardous, toxic chemicals. In 2008 IPEN was funded by GEF to develop educational materials to support awareness building around persistent organic pollutants, the legal and institutional arrangements governing them, and community-based management of these chemicals.³⁶⁵ The international climate change regime under the UN Framework Convention on Climate Change is another area where NGOs play a prominent role in public international environmental governance, especially under certification

³⁵⁹ Agenda 21, Chapter 27, 161–3. See also O'Neill, 'Architects, Agitators, and Entrepreneurs', in Axelrod and VanDeveer, *Global Environment*, 26.

³⁶⁰ Chapter 5, pp. 147–8. ³⁶¹ *Ibid.*, p. 163. ³⁶² *Ibid.* ³⁶³ World Bank Operational Directive 14.70 (1989).

³⁶⁴ www.traffic.org

³⁶⁵ See further Persistent Organic Pollutants (POPs): A Training Manual for Community-Based Actions, www.sgp-pops.org

mechanisms such as the Clean Development Mechanism and the emerging processes for REDD+ (reducing emissions from deforestation and forest degradation).³⁶⁶

Legal Groups

Private groups and associations of lawyers have long played a role in the progressive development of international environmental law. Since the Institut de Droit International adopted its 1911 Resolution on International Regulations Regarding the Role of International Watercourses for Purposes Other than Navigation,³⁶⁷ it and the International Law Association have developed model international rules on a range of environmental issues, including transboundary water resources and atmospheric pollution. The IUCN Environmental Law Centre and the IUCN Commission on Environmental Law have prepared important draft treaties that have formed the basis of formal negotiations. Other private organisations contributing significantly to the field include environmental law groups based in the United States, such as the Natural Resources Defense Council (NRDC), the Earthjustice Legal Defense Fund and the Environmental Defense Fund (EDF), which play an advocacy role in the development of international environmental law. The International Council on Environmental Law and organisations such as the Center for International Environmental Law (CIEL) in Washington, DC, have provided international legal assistance to developing countries and non-governmental organisations. Many national academic institutions have also contributed to the domestic implementation of international environmental obligations.

Corporate Sector³⁶⁸

Business groups and companies, including transnational corporations (TNCs), play an increasingly active role in international environmental regulation. Members of the corporate sector participate as observers in international legal negotiations where it is perceived that issues affecting their interests are likely to be legislated on. At negotiations relating to the 1987 Montreal Protocol, the 1992 Climate Change Convention and post-2020 arrangements, and the 2000 Biosafety Protocol, among others, individual companies, trade associations and other industry groups have been particularly active. Their participation reflects the relevance of public international law to the business community in a globalised trading environment.

In international environmental negotiations, private sector associations such as the International Chamber of Commerce (ICC) and the World Business Council for Sustainable Development (WBCSD), as well as a host of trade associations and groups focused on specific industries, have sought to ensure that the interests of the business community are taken into account. To that end, they, and others, have developed proposals for the development of international environmental law, such as the Business Charter on Sustainable Development,³⁶⁹ the Declaration

³⁶⁶ See further, Chapter 8, pp. 310–14. ³⁶⁷ See Chapter 2, p. 22.

³⁶⁸ See Agenda 21, Chapter 30; *Future We Want*, paras. 46 and 47.

³⁶⁹ Business Charter on Sustainable Development, adopted by the 64th session of the board of the International Chamber of Commerce; Official Report of the Second World Industry Conference on Environmental Management, Rotterdam, 10–12 April 1991; L. M. Thomas, 'The Business Charter for Sustainable Development: Action Beyond UNCED', 1 *Review of European Community and International Environmental Law* 325 (1992); E. Morgera, *Corporate Accountability in International Environmental Law* (Oxford: Oxford University Press, 2009).

of the World Industry Conference on Environmental Management (WICEM II) and the CERES Principles (in the United States).³⁷⁰ In addition, they hold regular 'dialogues' with intergovernmental environmental organisations, such as UNEP's Business and Industry Dialogue held at the Rio+20 Summit.

Transnational corporations have also been the subject of international regulatory efforts in relation to activities which may entail harmful consequences. In tandem with the global corporate social responsibility movement, calls have continued to grow for minimum international standards of behaviour to govern cross-border business activities, especially of TNCs. The importance of such corporate actors to international environmental protection is highlighted by studies showing the global environmental impact of major companies.³⁷¹

The OECD Guidelines for multinational enterprises were introduced in 1976 as the first internationally agreed framework for cooperation in the field of international direct investment and multinational enterprises.³⁷² They have been reviewed five times with the most recent update in 2011.³⁷³ The Guidelines remain the most comprehensive instrument in existence establishing corporate responsibility multilaterally agreed by governments. Part VI of the 2011 Guidelines (on the environment) provides that:

Enterprises should, within the framework of laws, regulations and administrative practices in the countries in which they operate, and in consideration of relevant international agreements, principles, objectives, and standards, take due account of the need to protect the environment, public health and safety, and generally to conduct their activities in a manner contributing to the wider goal of sustainable development.³⁷⁴

Another significant, albeit soft law, attempt to engage the private sector in global environmental governance has been the Global Compact established by the UN in 2000. The Global Compact – a voluntary initiative joined by over 8,000 companies – commits its corporate participants to adhere to ten principles and shared values. Three of these relate to the environment, and commit businesses to:

³⁷⁰ Formerly known as the Valdez Principles. See further, www.ceres.org/about-us/our-history/ceres-principles

³⁷¹ See e.g. R. Heede, 'Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854–2010', 122(1) *Climatic Change* 229 (2014) (finding ninety 'carbon major' companies were responsible for 63 per cent of cumulative worldwide industrial emissions of greenhouse gases, carbon dioxide and methane, between 1751 and 2010).

³⁷² Annexed to the Declaration of 21 June 1976 by governments of OECD member countries in international investment and multinational enterprises, as amended in 1979, 1982 and 1984: 15 ILM 969 (1976), 31 ILM 494 (1992).

³⁷³ OECD Guidelines for Multinational Enterprises, 2011 edn, available at <http://mneguidelines.oecd.org/text>. The Guidelines propose that enterprises should, in the countries in which they operate, contribute to 'economic, social and environmental progress with a view to achieving sustainable development' ('II. General Policies', para. A.1).

³⁷⁴ The Guidelines indicate, inter alia, the following minimum requirements for enterprises: to establish and maintain a system of environmental management appropriate to the enterprise; to provide adequate and timely information on the potential environment, health and safety impacts of the activities of the enterprise; to assess and address the foreseeable environmental, health and safety-related impacts associated with the processes, goods and services of the enterprise over their full life cycle with a view to avoiding or mitigating them (including preparing an appropriate environmental impact assessment for significant impacts); not to use the lack of full scientific certainty as a reason for postponing cost-effective measures to prevent or minimise such damage; to maintain contingency plans for preventing, mitigating and controlling serious environmental and health damage from their operations; to seek continually to improve corporate environmental performance; to provide adequate education and training to workers in environmental health and safety matters; and to contribute to the development of environmentally meaningful and economically efficient public policy (2011 edn, part VI, paras. 1–8).

- support a precautionary approach to environmental challenges;
- undertake initiatives to promote greater environmental responsibility; and
- encourage the development and diffusion of environmentally friendly technologies.³⁷⁵

International legally binding standards governing corporate conduct with implications for the environment have proved more elusive (not least due to the opposition of many states).³⁷⁶ However, in June 2014 the UN Human Rights Council adopted a resolution by which it decided 'to establish an open-ended intergovernmental working group on transnational corporations and other business enterprises with respect to human rights, whose mandate shall be to elaborate an international legally binding instrument to regulate, in international human rights law, the activities of transnational corporations and other business enterprises'.³⁷⁷ Although the focus of this instrument will be on human rights violations, it is likely that it will also consider environmental degradation as a result of corporate activities that undermine realisation of human rights protections.

Individuals and Indigenous Communities

Individual citizens have traditionally expressed their involvement in the development and application of international environmental law through the activities of their national governments or environmental organisations. However, the growing relationship between human rights and environmental discourse at the international level has led to individuals having recourse to international human rights norms and procedures including, where available, the right to complain to international bodies.³⁷⁸ International law also recognises the special interests and rights of indigenous communities, for example in relation to land rights and traditional knowledge associated with the conservation of biodiversity.³⁷⁹ At the same time, their close relationship to and dependency upon land and functioning ecosystems has made many indigenous peoples extremely vulnerable to environmental degradation caused by global environmental problems, such as climate change. The outcome document of the Rio+20 summit, *The Future We Want*, recognises 'the importance of the participation of indigenous peoples in the achievement of sustainable development'.

As citizens of nation states, individuals are responsible for the implementation of international obligations; their role will be enhanced if they are able to report violations by governments of

³⁷⁵ Global Compact Annual Review – Anniversary Edition, June 2010; www.unglobalcompact.org/what-is-gc/mission/principles. Another soft law development that is galvanising corporate action to reduce greenhouse gas emissions is the We Mean Business coalition, which was formed in the lead-up to the Paris COP and is a coalition of organisations working with thousands of the world's most influential businesses. For more information, see www.wemeanbusinesscoalition.org/about

³⁷⁶ E. Morgera, 'Multinational Corporations and International Environmental Law', in S. Alam et al. (eds.), *Routledge Handbook of International Environmental Law* (New York: Routledge, 2013), 189.

³⁷⁷ HRC Res. 26/9 (2014), para. 1. ³⁷⁸ Chapter 17, pp. 819–27.

³⁷⁹ The 2010 Nagoya Protocol is a leading example (See Chapter 10, pp. 403–4). See also D. Shelton, 'Fair Play, Fair Pay: Preserving Traditional Knowledge and Biological Resources', 5 *Yearbook of International Environmental Law* 77 (1994); R. Gupta, 'Indigenous Peoples and the International Environmental Community: Accommodating Claims Through a Co-operative Legal Process', 74 *Security Council Res.* 687/1991 (1991). *Security Council Res.* 687/1991 (1991). *New York University Law Review* 1741 (1999); Benjamin J. Richardson, 'Indigenous Peoples, International Law and Sustainability', 10(1) *European Community and International Environmental Law* 1 (2001); E. Morgera and E. Tsioumani, 'The Evolution of Benefit Sharing: Linking Biodiversity and Community Livelihoods', 19(2) *European Community and International Environmental Law* 150 (2010).

international legal obligations to environmental organisations, to national public authorities and, in the case of the EU and international human rights organisations, to international organisations. It is in regard to the latter that individuals have acquired rights under international law: the increased availability of complaint procedures – such as the Inspection Panel of the World Bank and the non-compliance mechanism established under the 1998 Aarhus Convention³⁸⁰ – provides formal mechanisms.

The groundwork for these developments was laid at UNCED, as reflected in the Rio Declaration, which recognised the rights of individual citizens to participate in decision-making processes, to have access to information, and to have access to judicial and administrative remedies. Principle 10 of the Rio Declaration provides that:

[e]nvironmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Although Principle 10 is not binding per se, it has provided an international benchmark against which the compatibility of national standards can be compared. Building on the human rights model, these developments have facilitated the creation of a new range of procedural rights granted to individuals by international law, and exercisable at the national and, possibly, international levels.³⁸¹ Principle 10 inspired the adoption of the first international convention – the 1998 Aarhus Convention – to require parties to guarantee the rights of access to information, public participation in decision-making and access to justice in environmental matters, and to promote the Convention's principles in international environmental decision-making and within international organisations.³⁸² Subsequent developments, such as the 2003 Protocol to the Aarhus Convention on Pollutant Release and Transfer Registers, have further amplified these rights.

The Media

While the contribution of the media to international environmental law should not be overstated, there is little doubt that it plays an important informal role in various aspects of international environmental law. The media is able to place a spotlight on particular international legal issues which excite public interest and which can serve to change the public (or

³⁸⁰ Chapter 5, pp. 172–5.

³⁸¹ On access to information, see Chapter 15, pp. 683ff; on participation in environmental impact assessments, see Chapter 14, pp. 668–9; on access to national remedies, see Chapter 5, pp. 657–8.

³⁸² Aarhus, 25 June 1998, in force 30 October 2001, Arts. 1 and 3(7). The rights established by the Convention are to be applied without discrimination as to citizenship, nationality or domicile or place of registration/effective centre of activities (Art. 3(9)). On access to and dissemination of information under Arts. 4 and 5, see Chapter 15, p. 710.

private) position of states.³⁸³ The media also provides an opportunity for governments to make statements that may have legal consequences. In the *Nuclear Tests* cases, the International Court of Justice held that it did not have to decide on the Australian and New Zealand claims, after the French prime minister made a statement at a press conference that France no longer intended to conduct atmospheric nuclear tests after 1974.³⁸⁴

CONCLUSIONS

The discussion in this chapter highlights the 'expanding web of international governance' that now characterises the field of international environmental law.³⁸⁵ It indicates that the range of actors involved in the development and application of international environmental law is broad, and that the involvement of non-state actors is recognised as legitimate, and is increasingly being encouraged, at both national and international levels. At the same time, a growing role for non-state actors of various kinds in international environmental law has shifted the focus from (exclusively) top-down strategies of lawmaking and implementation, with states and international organisations as the principal actors, to a bottom-up dynamic where international legal development may be driven to a greater extent by the actions of individuals, business and NGOs. Edith Brown Weiss describes this as a 'kaleidoscopic pattern' that poses both challenges for the international legal system and opportunities to expand and strengthen the foundations of international law.³⁸⁶

Operating in this 'new multilayered system', international environmental law has three interrelated challenges: first, to ensure that all states are able to participate in the response of the international community to the growing range of environmental challenges which require an international legal response; second, to strengthen the role of international organisations, and their effectiveness, by rationalising and coordinating their activities, and endowing them with increased functions; and, third, to ensure that the role of non-state actors is properly harnessed, by providing them with sufficient international status and responsibilities to participate effectively in the international legal process and to make the link that governments and international organisations seem to find so difficult: translating global obligations into domestic action and implementation.

These three challenges are closely interconnected, and each will require the further elaboration of rules of participation and procedure; the amendment of the constitutions of most international organisations; and a rethink about the limits of sovereignty. Beginning with the participation of states, it has become ever clearer that many developing states are not able to participate as fully and effectively in the lawmaking process as they should, because they frequently have insufficient financial and human resources. This is not a comment on their lack of insight, ability, inspiration or commitment; it simply reflects the explosion in the number of centres of

³⁸³ A prominent example was the leaking of emails by the press in the 'Climategate' incident and its implications for subsequent Copenhagen climate negotiations. For a discussion, see David Henderson, 'The Climate Change Debate Today: COP15, the CRU Affair, and the Basis for Policy', 21(3) *Energy and Environment* 279 (2010).

³⁸⁴ (1974) ICJ Reports 253, para. 37. Other statements were made by the minister of defence on French television and at press conferences, and by the minister of foreign affairs at the UN; on the legal effect of unilateral acts of this type, see Chapter 4, pp. 125-6.

³⁸⁵ L. A. Kimball, *Forging International Agreement: Strengthening Intergovernmental Institutions for Environment and Development* (Washington, DC: World Resources Institute, 1992), 2.

³⁸⁶ 'International Law in a Kaleidoscopic World', 1(1) *Asian Journal of International Law* 21 at 24 (2010).

international environmental legislation that has occurred in the past fifty years. Without effective participation in the lawmaking process, there can be little expectation that countries, particularly small island states and least developed countries, will be able to translate their international commitments into domestic action. International law is increasingly complex and technical, both to negotiate and to apply, and significant effort needs to be made to develop human capacities, including developing international legal knowledge.

The process of rationalisation and coordination of the activities of international organisations is closely linked to the effective participation of states. The proliferation of organisations, including treaty-based environmental organisations, has brought with it a proliferation of secretariats, most of which would be able to function far more efficiently if they could readily share experiences and expertise and work to minimise the overlaps between their respective fields of competence. Rationalisation and better coordination would allow the functions of the organisations and the secretariats to be more efficiently undertaken, and might then provide them with a stronger basis to engage in the sorts of activities which are clearly needed, for which they are well equipped, and which they should be undertaking: preparing documentation, synthesising national implementation reports, encouraging compliance, conducting verification and sponsoring new agreements.³⁸⁷

Many international organisations already rely heavily on the efforts and activities of non-state actors, either informally or formally. Business and industry are increasingly involved in global environmental governance as the impact of environmental regulations on companies' activities becomes more substantial. The corporate social responsibility movement, coupled with efforts to develop soft law guidelines and principles for multinational enterprises and their activities with environmental consequences, offer the promise for the private sector to make a meaningful and positive contribution to international environmental law, although the lack of binding standards governing transnational corporate activity remains a limitation. Other non-state actors, particularly environmental NGOs, need to be given a strengthened role, and as implementation and enforcement become increasingly important their participation in the process as observers could be supplemented by allowing them to provide information of a general nature or, more specifically, on non-compliance by states with their international obligations. This has happened under the non-compliance procedure of the 1998 Aarhus Convention. The model provided by the human rights field is a useful one that could be further extended into the environmental field; this is perhaps the direction which UNEP should be encouraged to take, given its recent injection of new authority and resources. UNEP has a broad mandate to ensure the progressive development of international environmental law, and it should be encouraged to develop that mandate in an expansive manner.

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4

International Lawmaking and Regulation

CHAPTER OUTLINE

This chapter identifies the sources of international legal obligation in the field of the environment and the main regulatory techniques used to give effect to these obligations. To assist understanding of international lawmaking and regulation in the environmental arena, this chapter provides some background on general processes of treaty-making, practice and interpretation. Sources of international environmental legal obligations discussed include:

1. treaty law;
2. other international acts (such as the decisions of international organisations);
3. customary international law or general principles of international law; and
4. subsidiary sources (such as the decisions of international courts and tribunals or the writings of respected jurists).

The chapter also discusses the difference between international environmental obligations regarded as 'hard law' (having legally binding effect) and 'soft law' (not formally binding but exercising varying levels of authority as an indication of international consensus or best practice).

The latter half of the chapter considers the kinds of regulatory approaches that may be used to implement international environmental obligations, including:

- techniques of 'direct' regulation utilising a system of standards and penalties;
- economic instruments that rely on incentives of various kinds to motivate compliance by market actors; and
- integrated management approaches that seek to match regulatory efforts to the cross-cutting nature of many environmental issues.

INTRODUCTION

International environmental lawmaking and regulation draws both from general sources of international law, and regulatory techniques developed in domestic environmental legal systems. This chapter identifies the sources of international legal obligation pertinent to

environmental issues, and the regulatory techniques that have been adapted from domestic models to give effect to these obligations.¹

International law is traditionally stated to comprise 'the body of rules which are legally binding on states in their intercourse with each other'.² These rules derive their authority, in accordance with Article 38(1) of the Statute of the International Court of Justice (ICJ), from four sources: treaties, international custom, general principles of law, and subsidiary sources (decisions of courts and tribunals and the writings of jurists and groups of jurists). It is to these sources that international courts look in determining whether a particular legally binding principle or rule of international environmental law exists. The list of sources identified in Article 38(1) does not wholly reflect the sources of obligation, broadly understood, which have arisen in international environmental law. A list of sources of international environmental law is more properly reflected in the list proposed by the International Law Commission (ILC) in 1989, which included those identified in Article 38(1) as well as binding decisions of international organisations, and judgments of international courts or tribunals.³

Beyond these sources of 'hard law', which establish legally binding obligations, there are also so-called rules of 'soft law', which are not binding per se but which in the field of international environmental law can play an important role; they point to the likely future direction of formally binding obligations, by informally establishing acceptable norms of behaviour, and by 'codifying' or possibly reflecting rules of customary law.⁴ It is also worth recalling that, although the rules of public international law primarily govern relations between states, it is now widely accepted that states are no longer the only subjects of international law, and that the rules of international law can, and do, impose obligations upon other members of the international community, in particular international organisations and, to a more limited extent, non-state actors, including individuals and corporations.

The traditional sources of international law, together with acts of international organisations and taking account of hard and soft law, have given rise to a large body of international legal obligations which relate, directly or indirectly, to the protection of the environment. These have arisen without a central legislative authority: the international lawmaking function is decentralised and fragmented. Accordingly, the rules and principles of international environmental law comprise a complex network of bilateral and multilateral legal relations. With the exception of some of the general rules and principles identified in Chapter 6, and the rules established by particular treaties, there exists no 'level playing field'

¹ See generally D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), ch. 6; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), chs. 19–21, 40; D. Bodansky, *The Art and Craft of International Environmental Law* (Cambridge, MA/London: Harvard University Press, 2010), ch. 10; G. Ulfstein, 'International Framework for Environmental Decision-making', in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010), ch. 2; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), ch. 1.

² R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (Harlow: Longman, 1992, 9th edn), vol. 1, 4.

³ International Law Commission, Draft Articles on State Responsibility, Part 2, Art. 5(1), 'Report of the ILC to the United Nations General Assembly', UN Doc. A/44/10, 218 (1989).

⁴ See C. M. Chinkin, 'The Challenge of Soft Law: Development and Change in International Law', 38 *International and Comparative Law Quarterly* 850 (1989); A. Nollkaemper, 'The Distinction Between Non-Legal Norms and Legal Norms in International Affairs: An Analysis with Reference to the North Sea', 13 *International Journal of Marine and Coastal Law* 355 (1998); A. Boyle, 'Some Reflections on the Relationship of Soft Law and Treaties', 48 *International and Comparative Law Quarterly* 901 (1999).

that subjects all states and other members of the international community to identical standards. As treaties increasingly apply differentiated standards, the precise rules applicable to any state will depend on the treaties to which it is a party, and the acts of international organisations and the customary and other rules that are binding upon it. Disparities exist between countries and groups of countries, regions and subregions, and within regions and subregions.

UNCED attempted to propose a rationalisation of the lawmaking process by allocating particular functions to the regional and global levels, and by seeking to specify the roles of regional and global international organisations. The effort was not successful, having failed to address the root causes of legal and institutional fragmentation,⁵ although it did focus attention on the limitations of the existing international lawmaking process in the field of environment and development. Three limitations of an institutional or procedural nature dominate: (1) the need to improve the mechanisms for identifying critical issues and legislative priorities; (2) the need to ensure that all relevant actors participate in the lawmaking process (in particular, developing countries), including the negotiation, implementation, review and governance of international environmental agreements; and (3) rationalising the lawmaking process by improving coordination between international organisations, including those established by environmental agreements.⁶ These limitations are reflected in most activities relating to treaty-making and acts of international organisations, although they may also be relevant to developing rules of customary law which can be subjected to 'consciously directed adjustment' even if they are not as 'easily and unambiguously manufactured'.⁷

In addition to outlining the sources of international legal obligation in the environmental field, this chapter also addresses the broad regulatory techniques used to implement such obligations. These techniques often draw on domestic law models, applying them to the international context. Three categories of regulatory techniques are examined in the chapter: (1) direct or 'command-and-control' regulation, which generally involves the use of environmental standards backed up with compliance measures; (2) economic instruments, which endeavour to create financial or market incentives for environmentally responsible behaviour; and (3) integrated management approaches, which seek to better match regulatory arrangements to the interdependent nature of environmental systems. These broad approaches to the implementation of legal obligations in international environmental law are supplemented by a suite of procedural tools – such as environmental impact assessment, information provision and exchange, notification, risk assessment and liability – dealt with in more depth in Chapters 14–16.

⁵ The causes are complex, but include a lack of political will on the part of states to establish more effective and efficient arrangements, as well as a degree of bureaucratic resistance within some treaty secretariats.

⁶ See House of Commons Select Committee Report on Multilateral Environmental Agreements, 21 July 1999, www.publications.parliament.uk/pa/cm199899/cmselect/cmenvtra/cmenvtra.htm

⁷ P. Szasz, 'International Norm-Making', in E. Brown Weiss (ed.), *Environmental Change and International Law: New Challenges and Dimensions* (Tokyo: United Nations University Press, 1992), 41 at 43. On the negotiation of international environmental agreements, see B. I. Spector (ed.), *International Environmental Negotiation: Insights for Practice* (Laxenburg, Austria: IIASA, 1992); V. A. Kremenyuk and W. Lang, 'The Political, Diplomatic and Legal Background', in G. Sjöstedt (ed.), *International Environmental Negotiation* (Cheltenham, UK: Edward Elgar, 1993), 3–16.

TREATIES

Treaties (also referred to as conventions, accords, agreements and protocols) are the primary source of international legal rights and obligations in relation to environmental protection.⁸ A treaty can be adopted bilaterally, regionally or globally, and is defined by the 1969 Vienna Convention on the Law of Treaties (1969 Vienna Convention)⁹ as ‘an international agreement concluded between states in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation’.¹⁰ At the heart of this definition is the idea that the instrument is intended to create international legal rights and obligations between the parties. Whether an instrument is intended to create such binding obligations will usually be clear from its characteristics and the circumstances in which it was adopted. The 1972 Stockholm Declaration, the 1992 Rio Declaration and the 2012 Rio+20 declaration *The Future We Want* were not intended to create legal rights and obligations; the fact that they are not treaties, however, does not preclude the possibility that they may reflect rules of international law or contribute to the development of such rules, other than by operation of treaty law.¹¹

Numerous attempts have been made to classify treaties in one form or another, such as whether they are bilateral or multilateral, or of general or universal effect. These efforts frequently have not shed a great deal of light on the practical consequences of a particular treaty. Certain treaties nevertheless have greater authority than others, and may assume the quality of ‘lawmaking treaties’ in the sense that they have been concluded for the purpose of laying down general rules of conduct among a large number of states.¹² Factors which are relevant in assessing the authority of a treaty include: the subject matter it addresses; the number and representativity of states participating in its negotiation, and signing it or becoming parties; the commitments it establishes; and practice prior to and following its entry into force. In relation to environmental obligations, certain treaties of potentially global application might be considered to have ‘lawmaking’ characteristics, particularly where they have attracted a large number of ratifications and are established to ‘manage’ a problem area over time.¹³ These include the 1946 International Whaling Convention, the 1963 Test Ban Treaty, the 1971 Ramsar Convention, the 1972 London Convention and its 1996 Protocol, the 1972 World Heritage Convention, MARPOL 73/78, the 1973 CITES, the 1982 UNCLOS, the 1985 Vienna Convention,

⁸ See more generally, A. D. McNair, *The Law of Treaties* (Oxford: Clarendon Press, 1961, revised edn); S. Rosenne, *The Law of Treaties* (Leiden: Sijthoff, 1970); T. O. Elias, *The Modern Law of Treaties* (Leiden: Sijthoff, 1974); I. M. Sinclair, *The Vienna Convention on the Law of Treaties* (Manchester: Manchester University Press, 1984, 2nd edn); P. Reuter, *Introduction to the Law of Treaties* (London: Pinter, English trans., 1989); A. Aust, *Modern Treaty Law and Practice* (Cambridge: Cambridge University Press, 2000); M. Fitzmaurice, O. Elias and P. Merkouris, *Treaty Interpretation and the Vienna Convention on the Law of Treaties: 30 Years On* (Leiden: Brill, 2010).

⁹ Vienna, 23 May 1969, in force 27 January 1980, 8 ILM 679 (1969).

¹⁰ Art. 2(1)(a). Treaties may also be adopted by international organisations: see the 1986 Convention on the Law of Treaties Between States and International Organisations, 25 ILM 543 (1986).

¹¹ On occasion, they are referred to by international courts and tribunals to confirm the existence of a rule or finding: see e.g. *The Legality of the Threat or Use of Nuclear Weapons* (1996) ICJ Reports 226 at 242, para. 30, referring to Principle 24 of the Rio Declaration.

¹² José Alvarez, *International Organizations as Law-Makers* (Oxford: Oxford University Press, 2005).

¹³ José Alvarez, ‘The New Treaty Makers’, 25 *Boston College International and Comparative Law Review* 213 at 221–2 (2002).

the 1987 Montreal Protocol (as amended), the 1989 Basel Convention, the 1995 Fish Stocks Agreement, the 1998 Chemicals Convention and the 2001 POPs Convention. The 1992 Climate Change Convention and the 1992 Biodiversity Convention can also be considered 'lawmaking' treaties since their provisions lay down basic rules of general conduct capable of adapting to accommodate different sets of environmental circumstances over time. Both the latter treaties have also provided a forum for subsequent legal development: the 1992 Climate Change Convention is supplemented by the 1997 Kyoto Protocol and the 2015 Paris Agreement; the 1992 Biodiversity Convention has a 2000 Biosafety Protocol and a 2010 Protocol on Access to Genetic Resources and Fair and Equitable Sharing of Benefits (2010 Nagoya Protocol). Regional arrangements and treaties can also have a general lawmaking role for those regions; examples include the UNEP Regional Seas Conventions, the 1992 OSPAR Convention, the 1959 Antarctic Treaty and the 1998 Aarhus Convention.

The number of treaties relating to the environment increased dramatically after the 1980s, but more recently the rate of environmental treaty development has slowed. The emergence and initial rapid development of international environmental law was evidenced by the number of treaties adopted in each decade of the twentieth century: according to the UNEP Register, the number of such treaties was six by 1950, eighteen in the 1950s and twenty-six in the 1960s. The 1970s saw a jump, following the Stockholm Conference, to forty-seven treaties, a further forty-one treaties added in the 1980s, with 139 treaties recorded in the 1989 UNEP Register,¹⁴ expanding to a total of 272 treaties by 2005.¹⁵ By contrast, the new treaty database, ECOLEX, jointly maintained by UNEP, the FAO and IUCN, records only a dozen or so new multilateral treaties for the period 2005–15. While the table of treaties in this book reflects a similar apparent slowdown in environmental treaty-making during the opening years of the twenty-first century, this has been matched by increased activity within existing treaty regimes to consolidate and expand rules to cover new issues or to implement new mechanisms, such as non-compliance procedures or liability provisions.

To the UNEP Register and ECOLEX lists of treaties must be added those treaties that were not adopted primarily to address environmental issues but which nevertheless establish environmental obligations. As canvassed in Part IV of the book, these treaties play an increasingly important role in shaping the development of international environmental law. Primary examples include agreements relating to trade and other international economic matters, such as the GATT and other WTO agreements, regional free trade agreements, the agreements establishing the World Bank and the regional multilateral development banks, regional and international treaties on human rights, as well as bilateral and other agreements relating to the protection of foreign investments.¹⁶ Additionally, there also exists a huge body of bilateral environmental agreements that have contributed significantly to the development of international environmental law. More than 2,000 such treaties have apparently been adopted since

¹⁴ UNEP, 'Register of International Treaties and Other Agreements in the Field of the Environment', UN Doc. UNEP/GC.15/Inf.2 (1989); B. Rüster, B. Simma and M. Bock (eds.), *International Protection of the Environment – Treaties and Related Documents* (Dobbs Ferry, NY: Oceana, 1975–82; and 2nd Series, 1990–4); the list of agreements and instruments in UNCED Doc. A/CONF.151/PC/77.

¹⁵ UNEP, 'Register of International Treaties and Other Agreements in the Field of the Environment', UN Doc. UNEP/Env. Law/2005/3.

¹⁶ Chapter 18, pp. 900–3.

the mid-eighteenth century,¹⁷ with over 1,300 bilateral environmental agreements concluded between 1950 and 2012 alone.¹⁸

Environmental Treaties

Environmental treaties share the same general characteristics as other treaties, and are subject to the general rules reflected in the 1969 Vienna Convention and customary law. Nevertheless, certain special features exist, even if a standard format has not emerged. When regulating regional or global environmental problems, a framework treaty is frequently adopted. This sets out general obligations, creates the basic institutional arrangements, and provides procedures for the adoption of detailed obligations in a subsequent protocol(s).¹⁹ Frequently, a framework agreement or supplementary protocol will have one or more annexes or appendices, which include scientific, technical or administrative provisions (such as dispute settlement or information exchange),²⁰ but which might also list the species, substances or activities which are regulated,²¹ or the parties to which one or more substantive obligations will apply.²² This three-tiered approach (framework agreement, protocol, annex/appendices) introduces flexibility by allowing legal amendments or other changes in accordance with political, scientific or economic developments.

The Treaty-Making Process

The adoption and entry into force of an environmental treaty is preceded by a series of steps that will frequently take place over a lengthy period of time. Once a state or a group of states has identified an environmental issue as requiring international legislation, they will identify the forum or institution to serve as a legislative forum. If the subject is already covered by a framework treaty, the new legal obligation could be developed in a protocol or by amendments to an existing protocol; in such cases, the appropriate forum will be the Conference of the Parties or equivalent institution established by the framework agreement. If the international legislation can appropriately be dealt with by an international act other than a treaty, it may be addressed simply by a binding decision, resolution, or other act of an international organisation or the Conference of the Parties of an environmental treaty. If a new treaty is required, the states involved will need to determine which organisation will conduct the negotiation of the treaty. This decision can be controversial. Thus, although the 1992 Biodiversity Convention was

¹⁷ For a list of environmental agreements going back to the mid-eighteenth century, including bilateral agreements, see B. Rüster and B. Simma (eds.), *International Protection of the Environment* (Dobbs Ferry, NY: Oceana, 30 vols., and looseleaf service, 1975–93).

¹⁸ See the database of environmental bilateral agreements maintained by the International Environmental Agreements Database Project, at <https://iea.uoregon.edu>. This database does not purport to be comprehensive, given the difficulties in tracking all bilateral agreements in this field.

¹⁹ Framework treaties allowing for protocols include the conventions adopted under the UNEP Regional Seas Programme (see Chapter 11, pp. 465–72); the 1979 LRTAP Convention; the 1985 Vienna Convention; the 1989 Basel Convention; the 1992 Climate Change Convention; the 1992 Biodiversity Convention; and the 1998 Aarhus Convention.

²⁰ See e.g. the 1985 Vienna Convention (discussed in Chapter 7, pp. 279–80).

²¹ Examples include: the 1972 London Convention and its 1996 Protocol; the 1973 CITES; the 1987 Montreal Protocol; the 1989 Basel Convention; the 1998 Chemicals Convention; and the 2001 POPs Convention.

²² A leading example is the 1992 Climate Change Convention and its 1997 Kyoto Protocol and the 2015 Paris Agreement (see further Chapter 8, pp. 300–30).

negotiated under the auspices of UNEP, developing countries insisted that the UN General Assembly, rather than UNEP, be responsible for the Climate Change Convention. This was due to the view that developing countries were better represented in the UN General Assembly than at UNEP and better able to participate in negotiations.

Once the forum for negotiations is agreed, that body will establish a negotiating process. This could be anything from an informal ad hoc group of governmental experts (such as was established by the UNEP Governing Council for what became the 1985 Vienna Ozone Convention), to a formal institutional structure (such as the Intergovernmental Negotiating Committee (INC) for a Framework Convention on Climate Change (INC/FCCC), established by UN General Assembly Resolution 44/212 or the INC established by the UNEP Governing Council to negotiate the 2013 Minamata Mercury Convention).²³ Similar arrangements apply in the negotiation of protocols under framework agreements. An alternative approach is for an international organisation to establish a subsidiary body to 'prepare' a text for consideration and adoption by an Intergovernmental Diplomatic Conference (such as the establishment by the Governing Body of the IAEA of a Standing Committee on Nuclear Liability to prepare draft amendments to the 1963 Vienna Convention).

Negotiations may be open-ended in time or established for a limited period. Examples of the former include the negotiations of the 1985 Vienna Convention (which took place over five years) and the 1982 UN Convention on the Law of the Sea (UNCLOS) (which took nearly twenty years). On the other hand, formal negotiations of the 1992 Climate Change Convention and the 1992 Biodiversity Convention were concluded in just fifteen months, the negotiators having been asked to prepare a text in time for signature at UNCED; likewise, the Durban Platform for climate negotiations covering the post-2020 period specified adoption of a new comprehensive climate agreement by 2015, a goal that was achieved with conclusion of the 2015 Paris Agreement. Once the draft text has been agreed, it will be adopted and opened for signature. It will then enter into force in accordance with its provisions on entry into force.²⁴

The 1969 Vienna Convention and Legal Issues Relating to Treaties

The law of treaties is governed by customary law, the 1969 Vienna Convention on the Law of Treaties and the 1986 Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations. The 1969 Vienna Convention, large parts of which reflect rules of customary international law, provides the basis for considering many of the legal issues that arise in relation to treaties. With respect to 'environmental' treaties, certain legal issues merit particular attention, including: the effect of treaties on third or non-parties; the proper approach to interpreting the terms of a treaty; the consequences of conflict between two or more treaties; the legal effect of reservations and interpretative declarations; and the legal effect, if any, of unratified treaties. Each of these issues raises complex legal points, the resolution of which will always turn on the particular facts of a matter. Accordingly, the discussion that follows should be considered as introductory.

²³ UNEP Gov. Council, Dec. 25/5 (2009).

²⁴ See M. Fitzmaurice, 'Expression of Consent to Be Bound by a Treaty as Developed in Some Environmental Treaties', in J. Klabbers and R. Lefeber (eds.), *Essays on the Law of Treaties* (The Hague: Martinus Nijhoff, 1997), 59.

Interpretation

The techniques used to interpret treaties and other international acts can have important practical consequences. A restrictive approach to interpretation will limit the scope and effect of a rule, whereas a broad approach may identify an obligation where none was thought to exist. Most environmental treaties include definitions of some of the key words or phrases used in the treaty, but invariably there will be words for which states could not reach an agreed definition²⁵ or for which no definition was thought necessary at the time of negotiation.²⁶ Different treaties may define the same word or words differently.²⁷

The rules governing the interpretation of treaties are set out in Articles 31 and 32 of the 1969 Vienna Convention. Article 31 establishes the primary rule that a treaty is to be interpreted 'in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose'. From this general approach, certain consequences follow. A person seeking to rely on a special meaning for the terms of a treaty, as opposed to the ordinary meaning, will have to prove that special meaning.²⁸ The context of a treaty includes the whole of its text, the preamble, annexes and, in the case of some environmental treaties, footnotes.²⁹ Any agreement made between all the parties in connection with the conclusion of the treaty and any instrument made by one or more parties relating to the conclusion of the treaty and accepted by the other parties as such are included in understanding the treaty's context.³⁰ Examples of the latter include a protocol adopted after the conclusion of a framework treaty. In relation to environmental treaties, this happens frequently and is usually specifically provided for in the treaty, and a protocol may incorporate certain parts of a framework treaty.³¹ Finally, apart from the context, Article 31(3) of the 1969 Vienna Convention provides that account is also to be taken of certain factors which are extrinsic to the treaty: subsequent agreement between the parties regarding the interpretation or application of the treaty; subsequent practice in application of the treaty which establishes the agreement of the parties regarding its interpretation;³² and any relevant rules of international law applicable in

²⁵ See e.g. the failure to reach agreement on the definition of 'forest' in the 1992 Climate Change Convention. This was later remedied by the adoption of a definition in the Marrakesh Accords implementing the Kyoto Protocol in respect of accounting for forestry activities: see FCCC/KP/CMP/2005/8/Add. 3, Annex (30 March 2006).

²⁶ See e.g. the difficulties caused by the failure of the 1973 CITES to define 'pre-Convention specimen' (Chapter 10, p. 415).

²⁷ See e.g. the different definitions of 'pollution' in the 1979 LRTAP Convention (Chapter 7, p. 261), the 1976 Barcelona Convention and the 1982 UNCLOS (Chapter 11, p. 466), of 'waste' (see Chapter 12, pp. 610–13) and of 'adverse effects' in the 1985 Vienna Convention and the 1992 Climate Change Convention (see Chapter 16, p. 742).

²⁸ See e.g. *Legal Status of Eastern Greenland* case, PCIJ (1933) Ser. A/B No. 53, 49, as to the meaning of the term 'Greenland'.

²⁹ e.g. 1979 LRTAP Convention, Art. 8(f); and 1992 Climate Change Convention, Art. 1, which states that '[t]itles of articles are included solely to assist the reader'. The footnote to the latter provision raises the question of the legal effect, if any, of titles to individual Articles, and was inserted at the instigation of the US delegation in an attempt to downplay the legal effect of Art. 3, which is entitled 'Principles'.

³⁰ 1969 Vienna Convention, Art. 31(2). See e.g. Final Act of the Eleventh Antarctic Treaty Special Consultative Meeting, 4 October 1991, noting that the harvesting of ice was not considered to be an Antarctic mineral resource activity under the 1991 Antarctic Environment Protocol; see Chapter 13, pp. 639ff.

³¹ e.g. 1987 Montreal Protocol, Art. 14.

³² Decisions and acts of the institutions established by treaties, even if they are not binding, may thus assume a particular importance. See e.g. CITES Conf. Res. 5.11, concerning the meaning of 'pre-Convention specimen' (Chapter 10, p. 415); and Appendix I to Decision II/8, adopted at the second Meeting of the Parties to the Montreal Protocol establishing an indicative list of categories of incremental cost to be used by the Financial Mechanism, UNEP/OzL.Pro.2/3, 41, 29 June 1990.

the relations between the parties.³³ A notable development in recent years has been the willingness of international courts charged with the interpretation and application of an international agreement to have regard to rules of international environmental law arising outside the treaty which is being interpreted.³⁴ Related to this approach is the recognition by the ICJ that it is appropriate, in interpreting and applying environmental norms, including those reflected in treaties, to have regard to new norms and standards which may have been developed in the period after a treaty has been adopted:

Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past.³⁵

If the application of the approach laid down by Article 31 produces a result which is not clear or which is ambiguous, Article 32 allows recourse to be had to supplementary means of interpretation, which may also be used to confirm a meaning already established. The principal supplementary means are the *travaux préparatoires* of a treaty, including the minutes of formal negotiations, reports of sessions, and prior drafts of a text. Other supplementary means include the circumstances of a treaty's conclusion, and the application of certain principles of interpretation, such as *in dubio mitius*,³⁶ and *expressio unius est exclusio alterius*.³⁷ The reliance on supplementary means of interpretation at a later date means that states will ensure during the negotiation of a text that they are alert to the possible consequences of adding or removing language, or of opposing or failing to oppose language. In the negotiation of instruments, such as the Climate Change Convention and the Biodiversity Convention, the number of states involved was so large that it proved impossible to keep detailed formal records of all aspects of proceedings, although informal records may have been kept. This would make recourse to *travaux préparatoires* less feasible.

³³ On the interpretation of treaties by reference to customary international law, see the *Reparations for Injuries* case (1949) ICJ Reports 174 at 182. The European Court of Human Rights has held that the reference to 'relevant rules of international law' includes general principles of law, 57 ILR 201 at 217 (1975). See generally Philippe Sands, 'Sustainable Development: Treaty, Custom, and the Cross-Fertilization of International Law', in Alan Boyle and David Freestone (eds.), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford: Oxford University Press, 1999), 39; P. Merkouris, *Article 31(3)(c) VCLT and Systemic Integration: Normative Shadows in Plato's Cave* (Brill, 2015).

³⁴ See e.g. WTO Appellate Body, *US – Import Prohibition of Certain Shrimp and Shrimp Products*, 12 October 1998, paras. 129–34, 38 ILM 118 (1999). In the *EC – Biotech* case, however, the WTO panel took a restrictive approach in interpreting the notion of rules of international law applicable in the relations between the parties. See M. Young, 'The WTO's Use of Relevant Rules of International Law: An Analysis of the Biotech Case', 56 *International and Comparative Law Quarterly* 907 (2007); P. Sands, 'International Courts and the Application of the Concept of "Sustainable Development"', 3 *Max Planck Yearbook of UN Law* 389–407 (1999); C. MacLachlan, 'The Principle of Systemic Integration and Article 31(3)(c) of the Vienna Convention' 24 *International and Comparative Law Quarterly* 279 (2005).

³⁵ *Case Concerning the Gabčíkovo–Nagyymaros Project* (1997) ICJ Reports 7 at 78, para. 140. This was referred to as the 'principle of contemporaneity' by Judge Weeramantry (*ibid.*, 113ff.). See also *Pulp Mills* (2010) ICJ Reports 14, at paras. 194, 197 and 204.

³⁶ The PCIJ recognised the principle as meaning that, 'if the wording of a treaty provision is not clear, in choosing between several admissible interpretations, the one which involves the minimum of obligations for the parties should be adopted' (*Frontier Between Turkey and Iraq*, PCIJ (1925) Ser. B No. 12, 25).

³⁷ A maxim meaning that the expression of one thing excludes another. Jennings and Watts, *Oppenheim's International Law*, vol. 1, 1279, s. 633, describe it as an 'essentially grammatical' rule.

In practice, international bodies that are required to interpret and apply the language of a treaty apply widely differing approaches. One example of a 'restrictive' approach to treaty interpretation is the GATT Panel decision in the yellow-fin tuna dispute between Mexico and the United States, where the Panel interpreted Article XX(b) and (g) of the GATT to exclude the possibility of allowing an importer to take into account the environmental effects of a process leading to a product's final state when considering whether a product's import could be prohibited.³⁸ An example of a more 'expansive' approach to treaty interpretation is the holding by the European Court of Justice (ECJ) that environmental protection was one of the EU's 'essential objectives', even in the absence of any express reference to environmental protection in the original Treaty of Rome.³⁹ The approach to the interpretation of environmental agreements was also addressed by the ICJ in the *Pulp Mills* case in considering whether the Court's jurisdiction extended to other obligations of the parties under international agreements and general international law, beyond the 1975 Statute at issue in the dispute.⁴⁰

Entry into Force

Treaties provide expressly for the circumstances in which they will enter into force. This is usually upon ratification by a certain number of states.⁴¹ In the field of environmental law, global treaties have tended to require a low number of ratifications for entry into force.⁴² In some instances, entry into force depends upon the participation of certain states or states representing a certain percentage of a particular activity. Examples include the 1987 Montreal Protocol (entry into force upon eleven ratifications representing at least two-thirds of the 1986 estimated global consumption of substances controlled by the Montreal Protocol)⁴³ and the 2015 Paris Agreement (entry into force upon ratification by fifty-five states, incorporating states accounting for at least an estimated 55 per cent of the total greenhouse gas emissions).⁴⁴

Establishing a link between entry into force and the participation of particular states or all states that negotiated the agreement is designed to ensure the fullest participation of key states. However, it is liable to make entry into force hostage to the decision of just one or two states, as happened with the 1997 Kyoto Protocol following the decision of the United States to reject the Protocol. As the United States accounted for around one-quarter of global greenhouse gas emissions in 1990, this required ratification of the Protocol by virtually all other developed countries, including Russia, for the treaty to enter into force.⁴⁵ A number of environmental

³⁸ Chapter 18, pp. 848–9. The approach has not been followed by the WTO Appellate Body: see n. 34 and the accompanying text.

³⁹ ECJ, Case 240/83, *Procureur de la République v. Association de Défense des Brûleurs d'Huiles Usagées* [1985] ECR 531.

⁴⁰ At paras. 48–66; see Chapter 9, pp. 351–5.

⁴¹ Use of the term 'ratification' here includes the acceptance of, approval of or accession to a treaty.

⁴² See e.g. the twenty states required for the entry into force of the 1985 Vienna Convention and the 1989 Basel Convention.

⁴³ Art. 16(1); cf. entry into force of the 1990 amendments to the Montreal Protocol, which required at least twenty ratifications (1990 amendments, Art. 2(1)).

⁴⁴ Art. 21(1).

⁴⁵ Art. 25(1) of the Kyoto Protocol required ratification by 55 Parties to the Convention, incorporating Parties included in Annex I which accounted in total for at least 55 per cent of the total carbon dioxide emissions for 1990 of the Parties included in Annex I.

agreements have not entered into force because of their participation requirements: these include the 1988 CRAMRA, the 1993 Lugano Convention and the 1996 Comprehensive Test Ban Treaty.

As environmental agreements increasingly affect national economic interests, and where a large number of states have been involved in the negotiation process, the number of states required to ratify to bring a treaty into force has increased. The Biodiversity Convention and the Climate Change Convention respectively required the ratification of thirty and fifty states.⁴⁶ UNCLOS, which required sixty ratifications, only entered into force twelve years after its conclusion. Treaties that have not entered into force may nevertheless have certain legal consequences. Under the 1969 Vienna Convention, signatory states must refrain from acts which would defeat the objects and purposes of the treaty they have signed (unless they have indicated an intention not to become a party),⁴⁷ and, partly with this in mind, arrangements have been made to allow for the provisional application of a treaty or part of a treaty, prior to its entry into force.⁴⁸ Moreover, a treaty which has not yet entered into force may also contribute to the development of customary international law,⁴⁹ or reflect in clearer terms pre-existing customary international law.

Reservations and Interpretative Declarations

Most modern international environmental agreements do not allow reservations.⁵⁰ A few are silent on the matter,⁵¹ and some permit reservations only in strict accordance with specific provisions of the treaty.⁵² The general tendency to prohibit the use of reservations is intended to avoid a proliferation of bilateral legal relations. There are two principal reasons for this in the environmental field. First, many environmental treaties are framework agreements providing general structures and guidelines, rather than specific commitments with implications for a particular activity or practice. Second, where a treaty does deal with particularly sensitive or controversial matters, especially where important economic interests are involved, the negotiated text will often represent a series of delicate compromises which would be undermined by allowing one or more states to opt out of certain provisions. Flexibility is often built into the text itself. Reservations or other forms of opt-out are usually permitted in respect of 'secondary legislation', such as an act adopted by the institutions established under an environmental agreement. Examples include the reservations entered by the former Soviet Union, Norway,

⁴⁶ 1992 Biodiversity Convention, Art. 36; 1992 Climate Change Convention, Art. 23. The Nagoya Protocol to the Biodiversity Convention required the ratification of fifty states (Art. 33).

⁴⁷ Art. 18. An example of a state indicating its intention not to become a party to a convention that it has signed is the United States in relation to the 1997 Kyoto Protocol, ratification of which was rejected by the US Senate.

⁴⁸ See e.g. Resolutions 2 and 3 of the Conference adopting the 1990 Oil Pollution Preparedness Act calling for implementation of the Convention pending entry into force, including in particular Art. 12 (Final Act, OPPER/CONF/24, 29 November 1990, reprinted in 1 *Yearbook of International Environmental Law* 546 at 569-70 (1990)). See also the particular transitional arrangements in relation to the 1998 Chemicals Convention, Chapter 12, pp. 587-9.

⁴⁹ In the *Gabčíkovo-Nagymaros* case, the ICJ referred to the adoption of the 1997 Watercourses Convention (which only entered into force in 2014) as evidence of the 'modern development of international law' notwithstanding (1) the fact that the Convention was adopted between the close of pleadings in the case and the Court's judgment, and (2) Slovakia had abstained in the adoption of the Convention: (1997) ICJ Reports 7 at 56, para. 85.

⁵⁰ See e.g. 1985 Vienna Convention, Art. 18; 1987 Montreal Protocol, Art. 18; 1989 Basel Convention, Art. 26(1); 1992 Biodiversity Convention, Art. 37; 1992 Climate Change Convention, Art. 24; 2001 POPs Convention, Art. 27; 2010 Nagoya Protocol, Art. 34; 2013 Minamata Mercury Convention, Art. 32.

⁵¹ See e.g. 1979 LRTAP Convention; 1991 Espoo Convention; 1992 Watercourses Convention.

⁵² See e.g. 1982 UNCLOS, Art. 309.

Iceland and Japan to the 1983 International Whaling Convention moratorium on commercial whaling,⁵³ and the reservation originally entered by the United Kingdom to the decision at CITES to uplist the African elephant from Appendix II to Appendix I and exclude for a limited period the operation of the decision to its then territory of Hong Kong.⁵⁴ Where reservations are either expressly allowed or not prohibited, either for treaties or for acts of institutions adopted under treaties, customary international law and the 1969 Vienna Convention provide certain guidance on the conditions under which they will be permitted.⁵⁵ Parties are free to object to reservations that have been entered, which usually happens when the reservation is considered to be incompatible with the objects and purposes of the treaty or another rule of international law.⁵⁶

The trend towards limiting the permissibility of reservations has not prevented states, when signing or ratifying environmental treaties, from entering statements or 'interpretative declarations' explaining an understanding of a particular provision. Examples include: the declaration by the then Federal Republic of Germany to the 1989 Basel Convention;⁵⁷ the declaration entered by four small island states (Fiji, Kiribati, Nauru and Tuvalu) to the 1992 Climate Change Convention;⁵⁸ the declaration entered by the United Kingdom in respect of the 1992 Biodiversity Convention;⁵⁹ and the declarations submitted by several states to the 2001 POPs Convention.⁶⁰ The legal effect of such interpretative declarations remains an open question for which there are no settled general rules. On the other hand, some treaties expressly require declarations to be entered in respect of procedural matters⁶¹ or a choice among substantive options available under a treaty,⁶² or allow generally for declarations or statements.⁶³ The majority is silent as to declarations.

⁵³ Chapter 11, pp. 535–6. ⁵⁴ Chapter 10, p. 414.

⁵⁵ 1969 Vienna Convention, Art. 19; the *Case Concerning Reservations to the Convention on the Prevention and Punishment of the Crime of Genocide* (1951) ICJ Reports 15.

⁵⁶ See e.g. the numerous objections to the reservations entered by the former Soviet Union under the 1969 CLC (which includes no provision on reservations), purporting to exclude the application of certain jurisdictional rules under the Convention from being applied in respect of state-owned ships; see T. Scovazzi and T. Treves (eds.), *World Treaties for the Protection of the Environment* (Milan: Istituto per l'ambiente, 1992), 642.

⁵⁷ The declaration provided, inter alia, that 'nothing in this Convention shall be deemed to require the giving of notice to or the consent of any state for the passage of hazardous wastes on a vessel under the flag of a party exercising its right of innocent passage through the territorial sea or the freedom of navigation in an exclusive economic zone under international law' (see Scovazzi and Treves, *World Treaties*, 464).

⁵⁸ The states declared their 'understanding that signature of the Convention shall in no way constitute a renunciation of any rights under international law concerning state responsibility for the adverse effects of climate change and that no provisions in the Convention can be interpreted as derogating from the principles of general international law'.

⁵⁹ The declaration states, inter alia, 'the understanding that Article 3 of the Convention sets out a guiding principle to be taken into account in the implementation of the Convention', and that 'nothing in Article 20 or Article 21 authorises the Conference of the Parties to take decisions concerning the amount, nature, frequency or size of the contributions of the Parties under the Convention'; on these provisions, see Chapter 10, pp. 388ff.

⁶⁰ Parties, including Australia and Canada, declared that any amendment made to the Annexes under the Convention listing chemicals classed as POPs would only come into force for those countries upon their ratification of that amendment.

⁶¹ See e.g. 1985 Vienna Convention, Art. 11(3), providing for declarations concerning the acceptance of compulsory means of dispute settlement.

⁶² See e.g. 1991 VOC Protocol, Art. 2(2), which required declarations to express a choice between three possible options setting dates and amounts for emissions of volatile organic compounds.

⁶³ See e.g. 1982 UNCLOS, Art. 310, allowing declarations or statements 'however phrased or named, with a view, inter alia, to the harmonisation of its laws and regulations with the provisions of this Convention, provided that such declarations or statements do not purport to exclude or to modify the legal effect of the provisions of this Convention in their application to that state'.

Relations between International Agreements

The proliferation of environmental treaties has raised the possibility of overlap or conflict between two or more treaties. This issue is particularly important for the relationship between the growing number of environmental treaties which prohibit trade in certain goods and the WTO and regional trade treaties, which seek to restrict non-tariff barriers to trade and investment, including national or, possibly, internationally agreed environmental protection measures. Potential conflict between environmental agreements also exists where regional and global agreements have been adopted for the same subject matter, such as those for the protection of the marine environment (which might adopt different rules on the dumping of wastes)⁶⁴ and mitigation of climate change (as in the case of iron ocean fertilisation which has received different responses in the climate change, biodiversity and ocean dumping regimes).⁶⁵

The relationship between WTO rules and the 2000 Biosafety Protocol illustrates the potential for conflict. Parties to the 2000 Protocol are permitted to prohibit the import of 'living modified organisms' (LMOs) or LMO commodities on the grounds of biosafety risk, a provision that may conflict with earlier WTO obligations, if both the countries concerned were parties to the WTO.⁶⁶ In the event that a party to the Protocol were to ban the import of LMOs or LMO commodities from another state, where both states are parties to the WTO, which obligation would prevail? The Biosafety Protocol itself does not resolve this issue, as the inclusion of conflicting preambular statements effectively 'cancel each other out'.⁶⁷

Article 30 of the 1969 Vienna Convention sets forth rules governing the situation where states are parties to treaties relating to the same subject matter. Article 30(2) provides that, when a treaty specifies that it is subject to, or not incompatible with, an earlier or later treaty, then the provisions of the other treaty will prevail. Under Article 30(3), if all the parties to the earlier treaty are also parties to the later treaty, and the earlier treaty continues in force, then only those provisions of the earlier treaty that are compatible with the later treaty will apply. Finally, Article 30(4) governs the likely situation when the parties to the later treaty do not include all the parties to the earlier treaty. It provides that (a) as between states party to both treaties the same rule applies as in Article 30(3); and (b) as between a state party to both treaties and a state party to only one of the treaties, the treaty to which both states are parties governs their mutual rights and obligations.

With the growing number of environmental agreements touching upon the same subject matter, the question has also arisen as to the conditions under which a party is entitled to invoke the dispute settlement provisions under one treaty as opposed to another. This may be a particularly complex issue where one treaty sets forth general rules and another more specialised rules, as is the case with the 1982 UNCLOS and more specific marine pollution or fisheries

⁶⁴ Chapter 11, pp. 479–85.

⁶⁵ See D. Freestone and R. Rayfuse, 'Iron Ocean Fertilization and International Law', 364 *Marine Ecology Progress Series* 227 (2008).

⁶⁶ 2000 Biosafety Protocol, Arts. 10 and 11.

⁶⁷ M. A. Pollack and G. C. Shaffer, *When Cooperation Fails: The International Law and Politics of Genetically Modified Foods* (Oxford: Oxford University Press, 2009), at 154. The Biosafety Protocol preamble both emphasises that the Protocol is not to be interpreted 'as implying a change in the rights and obligations of a Party under any existing international agreements' and that the latter recital 'is not intended to subordinate this Protocol to other international agreements'. See, however, the decision in *EC-Biotech* in which a WTO Panel ruled the Biosafety Protocol was not relevant to interpretation of the WTO SPS Agreement in determining rights and obligations of a non-party to the Protocol (Chapter 18, pp. 871–81).

conservation agreements. The issue arose in the *Southern Bluefin Tuna* cases, which Australia and New Zealand chose to litigate under the 1982 UNCLOS rather than under the (regional) 1993 Convention on the Conservation of Southern Bluefin Tuna.⁶⁸ Japan argued that the UNCLOS Annex VII arbitral tribunal did not have jurisdiction, on the grounds, inter alia, that the 1993 Convention governed the dispute and Article 16 of that Convention (on dispute settlement) excluded the application of the procedures on dispute settlement under Part XV of UNCLOS.⁶⁹ By four votes to one, the UNCLOS arbitral tribunal accepted the argument: although Article 16 of the 1993 Convention did not expressly exclude any further proceedings under Part XV of UNCLOS, the 'intent of Article 16 [was] to remove proceedings under that Article from the reach of the compulsory procedures of section 2 of Part XV of UNCLOS'.⁷⁰ The award declining jurisdiction was not received with broad approval.⁷¹ It should not be assumed that it will be followed,⁷² particularly having regard to the approach taken by the International Tribunal for the Law of the Sea (ITLOS) the following year in the provisional measures phase of the *MOX* case, which raised a related, but distinguishable, issue.⁷³ The ITLOS rejected an argument by the United Kingdom to the effect that ITLOS did not have jurisdiction since the dispute was centred upon other conventions (and EU law) with their own dispute settlement provisions, noting that:

even if the OSPAR Convention, the EC Treaty and the Euratom Treaty contain rights or obligations similar to or identical with the rights or obligations set out in the Convention, the rights and obligations under those agreements have a separate existence from those under the Convention . . . [T]he application of international law rules on interpretation of treaties to identical or similar provisions of different treaties may not yield the same results, having regard to, *inter alia*, differences in the respective contexts, objects and purposes, subsequent practice of parties and *travaux préparatoires*.⁷⁴

However, the ECJ subsequently disagreed with that approach, ruling that it had exclusive competence to deal with an environmental dispute relating to UNCLOS between two EU members, in circumstances where the EU had exclusive competence over certain of the environmental causes of action in the case.⁷⁵ The issue is likely to be of continuing significance for the interpretation and application of international environmental agreements, which often contain

⁶⁸ Chapter 11, pp. 520–5.

⁶⁹ Art. 281(1) of UNCLOS provides: 'If the States Parties which are parties to a dispute concerning the interpretation or application of this Convention have agreed to seek settlement of the dispute by peaceful means of their own choice, the procedures provided for in this Part apply only where no settlement has been reached by recourse to such means and the agreement between the parties does not exclude any further procedure.'

⁷⁰ Arbitral Award of 4 August 2000, para. 57, 39 ILM 1359 (2000).

⁷¹ See e.g. B. Oxman, 'Complementary Agreements and Compulsory Jurisdiction', 95 *American Journal of International Law* 277 (2001).

⁷² See P. Sands, 'ITLOS: An International Lawyer's Perspective', in M. H. Nordquist and J. Norton Moore (eds.), *Twenty-Fifth Annual Conference: Current Marine Environmental Issues and the International Tribunal for the Law of the Sea* (The Hague/London: Martinus Nijhoff, 2001).

⁷³ ITLOS, *MOX Plant* case, Order of 3 December 2001.

⁷⁴ Paras. 50 and 51. In June 2003, the Annex VII Tribunal in the *MOX* case suspended the proceedings pending clarification of jurisdictional issues relating to EC competence: see Order No. 3, 24 June 2003. Following issue of the ECJ judgment on 30 May 2006, Ireland formally withdrew its claim against the UK before the Annex VII arbitral tribunal and these proceedings were terminated accordingly: see Order No. 6, 6 June 2008 (both orders available at www.pccpa.org).

⁷⁵ Chapter 5, p. 188.

the same or similar language imposing substantive obligations, but which may have been negotiated or subsequently applied in a particular context. It will also be relevant to the exercise of jurisdiction by international courts and tribunals. For example, in the *Pulp Mills* case, the ICJ declined to interpret a provision of the treaty that was in dispute as a referral to other international environmental agreements.⁷⁶ Consequently, the Court limited its findings to compliance with the bilateral treaty in dispute, rather than ruling on broader questions of whether Uruguay had complied with obligations under other multilateral international environmental conventions.⁷⁷

Amendment

The need for expedited amendment processes for environmental agreements (to take into account changes of a scientific, economic or political nature) has led to the adoption of innovative approaches. Almost all environmental treaties make express provision for a formal amendment process by the adoption of a further treaty between the parties.⁷⁸ Informal amendment may also take place orally or by tacit agreement of the parties, including decisions or acts of organs established under a treaty which may amount to a *de facto* amendment.

The provisions of the 1985 Vienna Convention and the 1987 Montreal Protocol illustrate novel techniques, which have been subsequently followed.⁷⁹ The 1985 Vienna Convention is a framework treaty with two annexes and provision for protocols.⁸⁰ To date, the only protocol is the 1987 Montreal Protocol, which was amended and adjusted in 1990, 1992, 1997, 1999, 2007 and 2016.⁸¹ The 1985 Vienna Convention establishes the rules for its own amendment as well as that of any protocols: as a last resort, amendments to the 1985 Vienna Convention may be adopted by a ‘three-fourths majority vote of the parties present and voting’ at a meeting of the Conference of the Parties; amendments to protocols require only a ‘two-thirds majority of the parties to that protocol present and voting’ at a Meeting of the Parties to the protocol.⁸² The 1987 Montreal Protocol also provides an alternative to formal amendment by the adoption of ‘adjustments and reductions’ by the parties; adjustment may be made to the ozone-depleting potential of controlled substances identified in Annexes to the Protocol, as well as production or consumption levels of controlled substances.⁸³ As a last resort, adjustments and reductions are adopted by a two-thirds majority of the parties present and voting which represent at least 50 per cent of the total consumption of the controlled substances, and these are binding on all parties without the possibility of objection.⁸⁴ Pursuant to Article 2 (10), the Protocol also allows the parties to add or remove any substances from any Annex to the Protocol and to decide on the mechanism, scope and timing of the control measures that should apply to such substances.⁸⁵

⁷⁶ Chapter 9, pp. 351–5. ⁷⁷ *Pulp Mills*, para. 63.

⁷⁸ See generally M. Bowman, ‘The Multilateral Treaty Amendment Process: A Case Study’, 66 *International and Comparative Law Quarterly* 540 (1995).

⁷⁹ See e.g. 1997 Kyoto Protocol; 2001 POPs Convention. ⁸⁰ 1985 Vienna Convention, Art. 8.

⁸¹ Chapter 7, pp. 280–1.

⁸² Art. 9. Amendments which have been adopted then need to be ratified, approved or accepted before entering into force, by three-quarters of the parties to the Convention or two-thirds of the parties to the Protocol unless otherwise provided by the Protocol (Art. 9(5)).

⁸³ Montreal Protocol, Art. 2(9)(a). ⁸⁴ *Ibid.*, Art. 2(9)(c) and (d).

⁸⁵ *Ibid.*, Art. 2(10)(a) and (b). Such decisions are to follow the procedure set out in Article 9 of the 1985 Vienna Convention.

Adjustments under Article 2(9) and decisions under Article 2(10) of the Protocol are made on the basis of assessments under Article 6. This procedure has been used to adopt adjustments at the second, fourth, seventh, ninth, eleventh and nineteenth Meetings of the Parties to the Protocol.⁸⁶ Amendments to the Annexes to the 1985 Vienna Convention or the 1987 Montreal Protocol are adopted in the same way as amendments to that Convention or Protocol.⁸⁷ However, the procedure for entry into force of an Annex amendment differs: it requires a party which objects to such an amendment to opt out, by notifying the depositary within six months of its adoption, failing which it will bind any state which has not objected.⁸⁸

OTHER INTERNATIONAL ACTS

Other international acts include those adopted by international organisations (which may be binding or non-binding), and by states in the form of non-binding declarations, memoranda of understanding or 'Action Plans'. Non-binding acts are often referred to as 'soft law'. Although not legally binding, they may contribute to the development of customary law or lead to the adoption of binding obligations by treaty or an act of an international organisation.

Acts of International Organisations

Acts of international organisations, sometimes referred to as secondary legislation, provide an important source of international law: they may be legally binding per se, or they may amend treaty obligations, or they may authoritatively interpret treaty obligations.⁸⁹ Since binding acts of international organisations derive their legal authority from the treaty on which they were based, they can be considered as part of treaty law.

Many far-reaching decisions affecting the use of natural resources result from acts of international organisations. Examples include: the 1982 decision of the International Whaling Commission to adopt a moratorium on commercial whaling;⁹⁰ the 1983 resolution of the Consultative Meeting of the Parties to the 1972 London Convention adopting a moratorium on the dumping of radioactive waste at sea;⁹¹ the 1989 decision by the CITES Conference of the Parties to ban the international trade in African elephant products;⁹² the 1991 Security Council resolution reaffirming the liability of Iraq for the environmental damage caused by its unlawful invasion of Kuwait;⁹³ and the 2010 decision of the Conference of the Parties to the 1992 Biodiversity Convention adopting a moratorium on commercial ocean fertilisation activities 'until there is an adequate scientific basis on which to justify such activities'.⁹⁴

⁸⁶ Chapter 7, pp. 280–1. ⁸⁷ 1985 Vienna Convention, Art. 10(2) and (3). ⁸⁸ *Ibid.*, Art. 10(2)(b).

⁸⁹ See generally P. Sands and P. Klein, *Bowett's Law of International Institutions* (London: Sweet & Maxwell, 2009, 6th edn), 284–302.

⁹⁰ Chapter 10, pp. 535–6.

⁹¹ Chapter 11, p. 479ff. Radioactive dumping at sea was definitively prohibited under the London Convention in 1993 through an amendment to the Annexes of the Convention.

⁹² Chapter 10, p. 415. This ban has not been effective, however, in limiting poaching and illegal trafficking of ivory (G. Wittemyer, 'Illegal Killing for Ivory Drives Global Decline in African Elephants', 111 *Proceedings of the National Academy of Sciences* 13117 (2014)).

⁹³ Chapter 16, p. 755.

⁹⁴ Decision IX/16, COP 9, C.4. See further, R. Rayfuse, 'Climate Change and the Law of the Sea', in R. Rayfuse and S. Scott (eds.), *International Law in the Era of Climate Change* (Cheltenham, UK: Edward Elgar, 2012), 147.

The legal effect of an act of an international organisation depends upon the treaty basis of the organisation. Usually, the treaty will specify the intended legal consequences. For instance, under Article 25 of the UN Charter, UN General Assembly resolutions are 'only recommendatory', whereas resolutions of the Security Council are binding 'on all states'.⁹⁵ Acts of organisations established by environmental treaties may be binding or non-binding. Such institutions often have a choice. Thus, the International Whaling Commission can adopt regulations that are 'effective' for parties not presenting an objection, or it can adopt recommendations that are not legally binding.⁹⁶ The Consultative Meetings of the Parties to the 1972 London Convention and 1996 Protocol can amend the Annexes to the Convention, which enter into force either upon notification by a party or after a stated period of time, unless a party declares that it is not able to accept an amendment.⁹⁷ The CITES Conference of the Parties adopts amendments to Appendices I and II to the Convention which 'enter into force' for all parties except those making a reservation.⁹⁸ And the Meeting of the Parties to the 1987 Montreal Protocol may adopt amendments and adjustments that can bind even parties not accepting them.⁹⁹ In each case, a majority of the parties to a treaty may adopt binding acts, although the minority is usually free to opt out.

In other cases, an international organisation may adopt an act (which might be called a resolution, recommendation or decision), without a clear provision in the treaty establishing the legal consequences of that act. Such resolutions, addressing substantive matters, are not binding per se, although they may contribute to the development of customary international law, or may set forth an authoritative interpretation of the international agreement under which it was adopted. Examples of such acts include the resolutions adopted by the Governing Council of UNEP that adopt or endorse principles, guidelines or recommended practices addressed to states and other members of the international community.¹⁰⁰ The resolution or act could also bind those states supporting it through the operation of some general principle of law, such as the principle of estoppel.¹⁰¹ Where the act is an internal act of the organisation (adopting a budget or procedural rules, or establishing a subsidiary organ), the resolution may bind all members of the organisation as a matter of the internal law of the organisation.¹⁰²

A further issue is the legal effect, if any, of an act of one international organisation upon another, to the extent that it is arguable that there exists a 'common law of international organisations'.¹⁰³ This would allow a measure, or interpretative act, adopted by one international organisation, to be relied upon by or have consequences for, another. The proliferation of international organisations addressing environmental issues increases the need for legal consistency and certainty. In practice, organisations do take account of each other's activities, in relation to both procedural and substantive matters, and precedents may be followed on an informal basis.¹⁰⁴

⁹⁵ This categorisation may be somewhat misleading, however, since certain resolutions of the General Assembly can have 'definitive legal effect'.

⁹⁶ 1946 International Whaling Convention, Arts. V(1) and (3) and VI.

⁹⁷ 1972 London Convention, Art. XV(2); 1996 Protocol, Art. 22(7). ⁹⁸ Arts. XI(3)(b) and XV.

⁹⁹ See Chapter 7, pp. 280–2. ¹⁰⁰ See the discussion of UNEP guidelines, Chapter 3, pp. 63–5.

¹⁰¹ See *Nuclear Tests* cases, discussed at pp. 255–6; Sands and Klein, *Bowett's Law of International Institutions*, 294.

¹⁰² The ICJ affirmed that resolutions of the General Assembly can have 'definitive legal effect' (*Case Concerning Certain Phosphate Lands in Nauru* (1992) ICJ Reports 251 (concerning UNGA Res. 2847)).

¹⁰³ See *de Merode*, WBAT Reports 1987, Decision No. 1, paras. 26 and 28.

¹⁰⁴ See further, F. Seyersted, *Common Law of International Organizations* (Leiden: Martinus Nijhoff, 2008).

Conference Declarations and Other Acts

Many intergovernmental conferences are convened every year to address environmental issues and issues linking environment and development. Many adopt declarations, statements or other non-binding acts, which may contribute to the development of international environmental law even if they are not binding as treaties or as formal acts of international organisations. The most important international conferences have been the 1949 UNCCUR, the 1972 Stockholm Conference, the 1992 UNCED, the 2002 WSSD, the 2012 Rio+20 Summit and the UN Sustainable Development Summit 2015. Each adopted non-binding acts, of which the Stockholm Declaration, the Rio Declaration and Agenda 21 include important elements which now reflect, or are contributing to the development of, customary international law. They continue to provide a significant influence on the development of new treaties and acts of international organisations.¹⁰⁵

Other conferences have addressed specific, or sectoral, issues. These too can contribute to the development of binding international rules over time. Examples of declarations which have influenced international legislation include the 1990 Ministerial Declaration of the Second World Climate Conference, the Declaration adopted by the 1990 United Nations Economic Commission for Europe (UNECE) Bergen Conference on Sustainable Development, and regional conferences on environment and development. These contributed to the consensus at UNCED and the negotiations of the Climate Change and Biodiversity Conventions. The 1992 Rio Declaration may be the single most significant such declaration, in terms of its contribution to the development of international environmental rules and jurisprudence, and is frequently invoked and referred to by international courts and tribunals.¹⁰⁶ Other conference declarations have led to acts of international organisations which are then followed by the adoption of a new treaty rule incorporating in binding terms the original conference act or objective. Examples include the 1990 Third Ministerial Declaration on the North Sea, elements of which were incorporated into resolutions of the Commissions established under the 1972 Oslo and 1974 Paris Conventions, and are now reflected in the 1992 OSPAR Convention;¹⁰⁷ and the 1998 Sintra Ministerial Declaration on the prevention of pollution of the northeast Atlantic by radioactive substances.¹⁰⁸ A more recent example is the 2009 Tromsø Declaration of the Arctic Council, which stated that black carbon may pose a particular threat to the Arctic, and that reductions have ‘the potential to slow the rate of Arctic snow, sea ice and sheet ice melting in the near-term’.¹⁰⁹ The importance of reducing emissions of black carbon was also recognised by a decision of the LRTAP executive body in the same year, leading to the formation of an expert group to consider the topic and the inclusion of relevant provisions in revisions to the 1999 Gothenburg Protocol adopted in 2012.¹¹⁰

¹⁰⁵ See Chapter 6, pp. 199–200 for examples.

¹⁰⁶ See e.g. ITLOS Seabed Disputes Chamber, *Advisory Opinion on Responsibilities and Obligations* (2011), at paras. 125–7, 135; *Iron Rhine* arbitration award (2005), at para. 59; J. E. Viñuales (ed.), *The Rio Declaration on Environment and Development: A Commentary* (Oxford: Oxford University Press, 2015).

¹⁰⁷ Chapter 11, pp. 472–3. ¹⁰⁸ *Ibid.*, p. 563.

¹⁰⁹ Tromsø Declaration, Sixth Ministerial Meeting of the Arctic Council, 29 April 2009, Tromsø, Norway, available at <https://oearchive.arctic-council.org/handle/11374/91>, 2.

¹¹⁰ ECE/EB.AIR/99/Add.1, Decision 2009/5. On the black carbon and the 1999 Gothenburg Protocol see further Chapter 7, pp. 270–1.

Another act often adopted by international conferences (or by international organisations) is the 'Action Plan', which also frequently forms the basis or context for the subsequent adoption of treaty rules. Examples include: the Recommendations adopted by the 1972 Stockholm Conference; the various Regional Action Plans adopted under the UNEP Regional Seas Programme; Agenda 21; and the National Biodiversity Strategies and Action Plans required under the Biodiversity Convention. Action Plans have also been adopted on a range of sectoral issues, such as water resources, drought and desertification, national parks, and climate change.

CUSTOMARY INTERNATIONAL LAW¹¹¹

Customary law rules have played a secondary role in international environmental law, although they can establish binding obligations for states and other members of the international community and may be relied upon in the codification of obligations in treaties and other binding acts. The significance of custom lies in the fact that it creates obligations for all states (or all states within a particular region) except those that have persistently objected to a practice and its legal consequences. Moreover, a customary rule may exist alongside a conventional rule, can inform the content and effect of a conventional rule, and can give rise to a distinct cause of action for dispute settlement purposes.

However, the process of developing rules of customary law cannot really be considered as part of a formal legislative process, and the existence of a customary rule may be difficult to prove.¹¹² As the *Iron Rhine* arbitral tribunal recognised, '[t]here is considerable debate as to what, within the field of environmental law, constitutes "rules" or "principles"; what is "soft law"; and which environmental treaty law or principles have contributed to the development of customary international law'.¹¹³ Proving customary international law requires evidence of consistent state practice, which practice will only rarely provide clear guidance as to the precise context or scope of any particular rule. Nevertheless, 'customary law can be somewhat shaped and directed, because the practices of states can be consciously affected by various international actions',¹¹⁴ including the non-binding acts of international organisations and the intergovernmental statements and declarations discussed above. Article 38(1)(b) of the Statute of the International Court of Justice identifies the two elements of customary international law: state practice and *opinio juris*.

¹¹¹ A. D'Amato, *The Concept of Custom in International Law* (Ithaca, NY: Cornell University Press, 1971); H. W. A. Thirlway, *International Customary Law and Codification* (Leiden: Sijthoff, 1972); M. Akehurst, 'Custom as a Source of International Law', *47 British Year Book of International Law* 1 (1974-5); M. E. Villiger, *Customary International Law and Treaties* (Dordrecht: Nijhoff, 1985); International Law Association, *London Statement of Principles Relating to the Formation of General Customary International Law* (2000); B. Leppard, *Customary International Law: A New Theory with Practical Applications* (Cambridge: Cambridge University Press, 2011).

¹¹² As reflected in the fact that national courts in different countries may reach diametrically opposed conclusions as to the customary status of a rule or principle of international law: see e.g. the precautionary principle, at Chapter 6, pp. 229-39.

¹¹³ *Iron Rhine* arbitration award, para. 58.

¹¹⁴ P. Szasz, 'International Norm-Making', in Brown Weiss (ed.), *Issues in International Law*, 67.

State Practice

State practice is notoriously difficult to prove, and little empirical research has been carried out on state practice relating to international environmental obligations.¹¹⁵ State practice can be discerned from several sources, including: ratification of treaties; participation in treaty negotiations and other international meetings; national legislation; the decisions of national courts; votes and other acts in the UN General Assembly and other international organisations; statements by ministers and other governmental and diplomatic representatives; formal diplomatic notes; and legal opinions by government lawyers.¹¹⁶ Preparatory materials to these sources can also provide useful evidence of state practice. Other sources include the pleadings of states before national and international courts and tribunals, parliamentary debates, collections of diplomatic materials and the records and *travaux préparatoires* of international conferences and treaty negotiations. Useful pleadings include those relating to the *Nuclear Tests* cases and the *Case Concerning Certain Phosphate Lands in Nauru*. The pleadings in New Zealand's resumed *Nuclear Tests* case (1995),¹¹⁷ the ICJ's Advisory Opinion on the legality of the use of nuclear weapons,¹¹⁸ the *Gabčíkovo–Nagymaros Project* case, the *Pulp Mills* case, and the *Whaling* and *Chagos* cases are also likely to repay careful consideration. It is important to bear in mind that the failure of a state to act can also provide evidence of state practice: mutual toleration of certain levels of pollution, or of activities which cause environmental degradation, can provide evidence that states accept such levels and activities as being compatible with international law.

For state practice to contribute to the development of a rule of law, the practice must be general, although this does not mean that it requires the participation of all states across the globe or in a particular region. The ICJ has stated that:

it might be that, even without the passage of any considerable period of time, a very widespread and representative participation in the convention might suffice of itself, provided it included states whose interests were specifically affected.¹¹⁹

The ICJ has also deemed it sufficient that the conduct of states should, in general, be consistent with such rules, and that instances of state conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indications of the recognition of a new rule.¹²⁰

In both cases, the ICJ was concerned with customary law arising in the context of treaty rules. The relationship between treaty and custom is close, often based upon elements of mutual interdependence. A treaty might codify or further develop a rule of customary law, as was the case in the 1982 UNCLOS. Alternatively, the conclusion and implementation of a treaty may

¹¹⁵ Useful sources of evidence of state practice in relation to environmental matters include national reports prepared for UNCED by participating states; and the country/region reports in Part 2 (the Year in Review) of the *Yearbook of International Environmental Law*.

¹¹⁶ See *Yearbook of the International Law Commission* (1950-II), 368–72.

¹¹⁷ For a summary of the pleadings, see P. Sands, 'Year in Review: International Court of Justice', 6 *Yearbook of International Environmental Law* 531 (1995).

¹¹⁸ *Ibid.*, 533. ¹¹⁹ *North Sea Continental Shelf* cases (1969) ICJ Reports 3, para. 73.

¹²⁰ *Military and Paramilitary Activities* case (1986) ICJ Reports 98.

reflect the existence of a rule of customary law. In the *North Sea Continental Shelf* cases, the ICJ found that state practice since the conclusion of the 1958 Geneva Convention on the Continental Shelf, including signature and ratification of the convention, could create a rule of customary law. In the *Military and Paramilitary Activities* case, the ICJ again considered the relationship between treaties and custom, finding that multilateral conventions ‘may have an important role to play in recording and defining rules deriving from custom, or indeed in developing them’.¹²¹ The frequent reference to, and incorporation of, Principle 21 of the Stockholm Declaration in the text of treaties is an example of treaties contributing to the development of custom.¹²² In 1996, the ICJ confirmed the customary status of the norm reflected in Principle 21,¹²³ but without addressing the extent or uniformity of state practice, and in the *Pulp Mills* case referred to ‘the principle of prevention, as a customary rule, [having] its origins in the due diligence that is required of a State in its territory’.¹²⁴ In its judgment in the *Gabčíkovo–Nagymaros* case, the ICJ cited with approval the principle of ‘equitable utilisation’ referred to in Article 5(2) of the 1997 Watercourses Convention.¹²⁵ In *Pulp Mills*, the ICJ stated that the obligation to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource, is ‘a requirement under general international law’.¹²⁶ This suggests that, in the environmental field, the ICJ may well be conscious of the ‘Herculean task’ of deducing rules of customary international law directly from state practice,¹²⁷ and will divine the existence of such rules by more flexible and pragmatic means.

Opinio Juris

The second element of customary law, *opinio juris sive necessitatis*, requires evidence that a state has acted in a particular way because it believes that it is required to do so by law. The ICJ in the *North Sea Continental Shelf* cases identified the content and role of *opinio juris*:

Not only must the acts concerned amount to a settled practice, but they must also be such, or be carried out in such a way, as to be evidence of a belief that this practice is rendered obligatory by the existence of a rule of law requiring it. The need for such a belief, i.e. the existence of a subjective element, is implicit in the very notion of the *opinio juris sive necessitatis*. The states concerned must therefore feel that they are conforming to what amounts to a legal obligation. The frequency, or even habitual character of the acts is not in itself enough. There are many intentional acts, e.g. in the field of ceremonial and protocol, which are performed almost invariably, but which are motivated only by considerations of courtesy, convenience or tradition, and not by any sense of legal duty.¹²⁸

¹²¹ (1986) ICJ Reports 97; *Libya/Malta Continental Shelf* case (1985) ICJ Reports 29. ¹²² See Chapter 6, pp. 206–10.

¹²³ Chapter 6, p. 202. ¹²⁴ At para. 101. See Chapter 9, pp. 351–5; *Iron Rhine* arbitration award (2005), para. 222.

¹²⁵ Chapter 9, pp. 345–51.

¹²⁶ *Pulp Mills*, para. 204. See Chapter 14, p. 678 and Chapter 9, pp. 351–5; ITLOS Seabed Disputes Chamber, *Advisory Opinion on Responsibilities and Obligations* (2011), para. 148.

¹²⁷ See D. Bodansky, ‘Customary (and Not So Customary) International Environmental Law’, 3 *Indiana Journal of Global Legal Studies* 105 at 113 (1995).

¹²⁸ (1969) ICJ Reports 3 at 44.

Proving the existence of *opinio juris* is a difficult task, since it requires consideration of the motives underlying state activity. It has been suggested that it can be found from a number of sources, including: expressions of beliefs regarding acts of international organisations and other international meetings;¹²⁹ statements made by representatives of states;¹³⁰ and the conclusion of treaties.¹³¹ Given the difficulties of proving *opinio juris*, there is a certain attraction in the view of Sir Hersch Lauterpacht, who proposed that the accurate principle consists in ‘regarding all uniform conduct of Governments (or, in appropriate cases, abstention therefrom) as evidencing the *opinio necessitatis juris* except when it is shown that the conduct in question was not accompanied by any such intention’.¹³² Such an approach, which shifts the burden of proof but which is not universally shared, would make the acceptance of principles and rules set out in treaties more likely to contribute to the development of custom. The reality, as indicated by the *Advisory Opinion on the Legality of the Use of Nuclear Weapons* and in the *Pulp Mills* case, is that the ICJ does not appear to place any great weight on the need to identify *opinio juris* before confirming the existence of rules of customary law.

Treaties and Custom

State practice in treaty-making and in accordance with obligations under treaties can contribute to the development of customary law. Moreover, as the ICJ recognised in the *Military and Paramilitary Activities* case, customary rules may emerge which are identical to those of treaty law, and which exist simultaneously with treaty obligations.¹³³ In the *North Sea Continental Shelf* cases, the ICJ had to decide whether the principle of equidistance for delimitation of the continental shelf found in Article 6 of the 1958 Convention on the Continental Shelf constituted a rule of customary international law. The ICJ found that it was necessary to examine the status of a principle as it stood when a treaty was drawn up, as it resulted from the effect of the treaty, and in the light of state practice subsequent to the treaty.¹³⁴ The ICJ held that, at the time of its conclusion, the principle set out in Article 6 of the 1958 Convention was a treaty rule and not regarded as *lege lata* or as an emerging rule of customary international law. The ICJ then considered whether the principle found in Article 6 had passed into the general *corpus* of international law, and was accepted as such by *opinio juris*, so as to be binding even for countries which were not parties to the Convention: such a process was ‘a perfectly possible one which does from time to time occur, although it could not be a result lightly regarded as having been attained’.¹³⁵ The ICJ identified the conditions to be fulfilled for a new rule of customary international law to be formed as a result of a treaty:

¹²⁹ *Military and Paramilitary Activities* case (1986) ICJ Reports 99–101. ¹³⁰ *Ibid.*, 100–1.

¹³¹ *Nottebohm* case (1955) ICJ Reports 22–3.

¹³² Sir Hersch Lauterpacht, *The Development of International Law by the International Court* (London: Stevens, 1958), 380.

¹³³ (1986) ICJ Reports 3 at 14. ¹³⁴ (1969) ICJ Reports 3 at 37. ¹³⁵ *Ibid.*

It would in the first place be necessary that the provision concerned should, at all events potentially, be of a fundamentally norm-creating character such as could be regarded as forming the basis of a general rule . . . With respect to the other elements usually regarded as necessary before a conventional rule can be considered to have become a general rule of international law, it might be that, even without the passage of any considerable period of time, a very widespread and representative participation in the convention might suffice of itself, provided it included that of states whose interests were specially affected.¹³⁶

In this case, the number of ratifications was respectable but insufficient. As to the time element:

[a]lthough the passage of only a short period of time is not necessarily, or of itself, a bar to the formation of a new rule of customary international law on the basis of what was originally a purely conventional rule, an indispensable requirement would be that within the period in question, short though it might be, state practice, including that of states whose interests are specially affected, should have been both extensive and virtually uniform in the sense of the provision invoked; and should moreover have occurred in such a way as to show a general recognition that a rule of law or legal obligation is involved.¹³⁷

The ICJ held on the facts of the case that state practice was insufficient to transform the treaty obligation under Article 6 of the 1958 Convention into a customary obligation.

However, it should not be assumed that the mere fact that a large number of states are party to a treaty establishes a customary norm for all. For example, the ICJ declined to indicate that the rule prohibiting widespread and significant environmental harm in armed conflict reflected a customary rule.¹³⁸ For environmental treaties, provisions of a fundamentally norm-creating character which are capable of being considered as rules of customary law include those of a substantive nature, as well as principles which inform and guide decision-making. Examples of substantive obligations reflected in many treaties include: Principle 21 of the Stockholm Declaration (and Principle 2 of the Rio Declaration); the obligation to cooperate on environmental problems associated with shared natural resources; the obligation to adopt general measures to protect the marine environment from significant damage; and the obligation to take measures to ensure the conservation of, and prevention of harm to, endangered species of flora and fauna. More specific examples of treaty rules which can be considered as having a 'fundamentally norm-creating character' arguably include: the obligation to use a shared international watercourse in an 'equitable and reasonable' manner; the obligation not to dump high-level radioactive waste in the marine environment; the obligation not to engage in commercial whaling; and the general obligation of developed states to limit emissions of gases such as sulphur dioxide or, arguably, greenhouse gases. Guiding principles which may, through treaty practice, reflect existing or emerging norms of customary law might include the polluter pays principle, the principle of precautionary action, and the principle of common but differentiated responsibilities of developed and developing countries. Procedural obligations that are binding under customary law include the obligation to carry out an environmental impact assessment for activities likely to cause significant environmental damage, as confirmed by

¹³⁶ *Ibid.*, 41-2.

¹³⁷ *Ibid.*, 43.

¹³⁸ (1996) ICJ Reports 226 at 242, para. 31.

the ICJ in the *Pulp Mills* case, as well as obligations pertaining to consultation and the provision of information on the environment.

Persistent Objector

Since a rule of customary law may develop without the express or active support of all states in the international community, the silence or failure of a state to act will not necessarily prevent such a rule from becoming binding upon it, as is clear from the judgments of the ICJ in the *North Sea Continental Shelf* cases. However, a state can avoid being bound by a rule if it persistently objects to that rule. This was one of the issues in the *Anglo-Norwegian Fisheries* case, where the United Kingdom argued the unlawfulness of the Norwegian practice of drawing straight base-lines across the mouths of bays to measure the width of the territorial sea, and where both states accepted the existence of the 'persistent objector' principle.¹³⁹ An example of persistent objection in the environmental field is provided by the clear and consistent objection of the United States to the view that the 'right to development' exists as a legal rule.¹⁴⁰ Another example may perhaps be seen in the ICJ's 1996 opinion that environmental obligations under the 1977 Geneva Protocol I did not, at least at that time, reflect customary law in view of the unwillingness of certain states to recognise the application of the Protocol to nuclear weapons.¹⁴¹ Closely related to the principle of the persistent objector is the operation of acquiescence, according to which the failure of a state to protest against the practice of other states over time will operate to limit or prevent a state from subsequently protesting against the fact that the practice is permitted as a matter of international law. The ICJ considered the principle of acquiescence in the *Anglo-Norwegian Fisheries* case, holding that the 'notoriety of the facts, the general toleration of the international community, Great Britain's position in the North Sea, her own interest in the question, and her prolonged abstention would in any case warrant Norway's enforcement of her system against the United Kingdom'.¹⁴²

Regional Custom

Rules of customary international law may also develop at the regional level. This was recognised by the ICJ in the *Asylum* case, holding that regional or local custom peculiar to Latin American states could be established where the rule invoked can be proved to be 'in accordance with a constant and uniform usage practised by the states in question'.¹⁴³ This is important in the field of environmental protection, where regional regimes have played a significant role alongside global ones, and in respect of which some regions are particularly well developed. A regional approach allows flexibility in encouraging groups of countries to develop rules that reflect their particular interests, needs and capacities. The Pacific region has been particularly active in developing international treaty rules prohibiting the presence of radioactive materials and the use of driftnet fishing practices in the region, both of which may now reflect rules of customary

¹³⁹ *Anglo-Norwegian Fisheries* case (1951) ICJ Reports 131. ¹⁴⁰ Chapter 6, pp. 228–9.

¹⁴¹ See n. 148 and the accompanying text. ¹⁴² (1951) ICJ Reports 139.

¹⁴³ *Asylum* case (*Colombia v. Peru*) (1950) ICJ Reports 266; in this case, the ICJ found that Colombia had not proved the existence of regional or local custom due to the uncertainty, contradiction, fluctuation, discrepancy and inconsistency in practice, which had also been influenced by political expediency.

law for that region. A similar conclusion may be drawn from state practice supporting efforts adopted by African states to limit and prohibit the import of hazardous and other waste onto the African continent, or in respect of certain mineral activities in the Antarctic.

GENERAL PRINCIPLES OF INTERNATIONAL LAW

The inclusion of ‘general principles of law recognised by civilised nations’ in Article 38 is widely believed to have been intended to allow the ICJ to consider and apply general principles of municipal law, and in practice they are occasionally relied upon when gaps need to be filled.¹⁴⁴ The ICJ has only rarely relied on general principles, although other international tribunals, such as the ECJ, have relied on general principles of municipal law to assist in reaching conclusions.¹⁴⁵

The general principles of good faith in the exercise of rights and prohibitions on the abuse by a state of a right that it enjoys under international law have been invoked by the ICJ and arbitral tribunals when considering international environmental issues.¹⁴⁶ The principle of good faith appears to have been relied upon by the President of the Tribunal in the *Fur Seal* arbitration in finding that the exercise of a right for the sole purpose of causing injury to another (abuse of rights) is prohibited.¹⁴⁷ The award in the *Trail Smelter* case is also cited as an example of reliance upon the principle of good faith, which governs the exercise of rights, to ensure that a proper balance is struck between a state’s rights and obligations and a ‘recognition of the interdependence of a person’s rights and obligations’.¹⁴⁸ The abuse of rights doctrine is also considered to provide the basis for the rule that a state must not interfere with the flow of a river to the detriment of other riparian states,¹⁴⁹ and is related to the principle requiring respect for mutual interests which is reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, namely *sic utere tuo ut alienum non laedas*. The principle of ‘good faith’ was relied upon by the ICJ in the *Nuclear Tests* cases to enable it to reach its conclusion on the legal effect of a French unilateral declaration that it would cease atmospheric nuclear tests. In recognising that unilateral declarations could have the effect of creating legal obligations which are binding ‘if given publicly, and with an intent to be bound, even though not made within the context of international negotiations’, the ICJ stated that:

¹⁴⁴ General principles of the type discussed in this section should be distinguished from the general obligations and principles that have emerged specifically in relation to international environmental law and are addressed in Chapter 6. See generally B. Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (London: Stevens, 1953, reprinted 2006); A. McNair, ‘The General Principles of Law Recognised by Civilised Nations’, 33 *British Year Book of International Law* 1 (1957); G. Herczegh, *General Principles of Law and the International Legal Order* (Budapest: Akadémiai Kiadó, 1969); E. Zoller, *La Bonne Foi en Droit International Public* (Paris: Pedone, 1977); M. Akehurst, ‘The Application of General Principles of Law by the Court of Justice of the European Communities’, 52 *British Year Book of International Law* 29 (1981); B. Vitanyi, ‘Les Positions Doctrinales Concernant le Sens de la Notion de “Principes Généraux de Droit Reconus par les Nations Civilisées”’, 86 *Revue Générale de Droit International Public* 48 (1982).

¹⁴⁵ See e.g. Case C-2/90, *Commission v. Belgium* [1993] 1 CMLR 365.

¹⁴⁶ On abuse of rights, see Jennings and Watts (eds.), *Oppenheim’s International Law*, vol. I, 407–10; Cheng, *General Principles*, 121–36.

¹⁴⁷ Chapter 9, pp. 509–11. ¹⁴⁸ Cheng, *General Principles*, 130.

¹⁴⁹ Jennings and Watts (eds.), *Oppenheim’s International Law*, vol. I, 408 and 585; see generally Chapter 8.

One of the basic principles governing the creation and performance of legal obligations, whatever their source, is the principle of good faith. Trust and confidence are inherent in international co-operation, in particular in an age when this co-operation in many fields is becoming increasingly essential. Just as the very rule of *pacta sunt servanda* in the law of treaties is based on good faith, so also is the binding character of an international obligation assumed by unilateral declaration. Thus interested states may take cognisance of unilateral declarations and place confidence in them, and are entitled to require that the obligation thus created be respected.¹⁵⁰

The ICJ held that a number of communications made by senior government officers speaking for France created binding legal obligations for that country. States that make unilateral declarations may establish binding environmental obligations. Examples include: the declaration by the UK that it would cease to permit the disposal of sewage sludge in the North Sea by the end of 1998;¹⁵¹ the declaration by Japan that it would prohibit driftnet fishing by the end of 1993;¹⁵² and the declaration by EU member states committing to achieve at least a 40 per cent reduction, by 2030, in overall EU greenhouse gas emissions compared to 1990 levels.¹⁵³ It is important to recall, however, that these and other such declarations need to be considered carefully, as they are often drafted to allow discretion in the act required by a state, or may only be intended to have political or domestic effects.¹⁵⁴ Other 'general principles' which have relevance for environmental matters include: the obligation to make reparation for the breach of an engagement;¹⁵⁵ the principle that a person may not plead his or her own wrong;¹⁵⁶ the principle that no one may be a judge in his or her own suit;¹⁵⁷ and 'elementary considerations of humanity'¹⁵⁸ and 'fundamental general principles of humanitarian law'.¹⁵⁹

Equity

It is also important to consider the role of 'equity', which allows the international community to take into account considerations of justice and fairness in the establishment, operation or application of a rule of international law. In the *Continental Shelf* case, the ICJ described the concept of equity as being a 'direct emanation of the idea of justice' and a 'general principle directly applicable as law' which should be applied as part of international law 'to balance up the various considerations which it regards as relevant in order to produce an equitable result'.¹⁶⁰

¹⁵⁰ *Nuclear Tests* cases (1974) ICJ Reports 267, 268. ¹⁵¹ Chapter 11, pp. 479ff.

¹⁵² See generally Chapter 11, pp. 451–2.

¹⁵³ See European Commission, *Communication: A Policy Framework for Climate and Energy in the Period from 2020 to 2030*, COM (2014), 15. This declared target formed the basis of the EU's 'Intended Nationally Determined Contribution' (INDC) submitted in the lead-up to the UNFCCC Paris COP21.

¹⁵⁴ *Military and Paramilitary Activities* case (1986) ICJ Reports 132, holding that a governmental statement did not involve a legally binding commitment; the *Case Concerning the Frontier Dispute (Burkina Faso and Mali)* (1986) ICJ Reports 554, 573 and 876.

¹⁵⁵ *Chorzów Factory* case and *Gabčíkovo–Nagymaros* case, Chapter 16, pp. 749–51.

¹⁵⁶ *Jurisdiction of the Courts of Danzig*, PCIJ (1928) Ser. B No. 15, 27. ¹⁵⁷ *Mosul* case, PCIJ (1925) Ser. B No. 12, 32.

¹⁵⁸ *Corfu Channel* case (1949) ICJ Reports 22.

¹⁵⁹ *Military and Paramilitary Activities* case (1986) ICJ Reports 113–15 and 129–30.

¹⁶⁰ *Continental Shelf (Tunisia/Libya)* (1982) ICJ Reports 18 at 60. See also the Individual Opinion of Judge Hudson in the *Diversion of the Waters from the Meuse* case, recognising equity as 'a part of international law' (PCIJ (1937) Ser. A/B No. 70, 76–7).

In that case, the ICJ held there were no rigid rules as to the exact weight to be attached to each element in a case, and that equity was not an exercise of discretion or conciliation or the operation of distributive justice.¹⁶¹ The ICJ has linked equity with acquiescence and estoppel,¹⁶² and applied it to the conservation of fishery resources to achieve an 'equitable solution derived from the applicable law'.¹⁶³

Equity can therefore operate as a part of international law to inform the application of a particular rule. It may also be applied by the ICJ to decide a case *ex aequo et bono* (in fairness and justice), if the parties to a dispute agree, in application of Article 38(2) of the Statute of the ICJ, although no such judgment has yet been given by the ICJ. As described in Chapter 6, many environmental treaties refer to or incorporate equity or equitable principles.¹⁶⁴ In applying equity in these treaties, it will be proper to establish its meaning in the context of its use in a particular treaty. Since, however, treaties rarely provide a working definition of equity, states, international organisations and international courts and tribunals may, ultimately, have to refer back to the general concept as interpreted and applied by the ICJ and other international tribunals.

SUBSIDIARY SOURCES¹⁶⁵

The main subsidiary sources are the decisions of courts and tribunals and the writings of jurists. It is only in the last decade that the ICJ has come to deal with the substantive aspects of international environmental protection: in the *Nuclear Tests* cases, the dispute was settled by the ICJ before the merits could be addressed. The ICJ has considered the conservation of fisheries resources (*Icelandic Fisheries* cases), guiding principles of general application (*Corfu Channel* case, *North Sea Continental Shelf* cases), the protection of the environment in times of war and armed conflict (Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*), general norms of international environmental law and principles governing the law of shared watercourses (*Gabčíkovo–Nagymaros* case),¹⁶⁶ the obligation to carry out an environmental impact assessment and consult and share information (*Pulp Mills* case),¹⁶⁷ and requirements relating to the conservation and harvesting of whales for 'scientific research' purposes (*Whaling* case).¹⁶⁸ ITLOS has now developed an important environmental jurisprudence, as have Annex VII arbitral tribunals.¹⁶⁹ Other international courts dealing with environmental issues are the European Court of Justice (which has been called upon to interpret and apply EU environmental law and international agreements such as the 1973 CITES, the 1979 Berne Convention, the 1982 UNCLOS and the GATT), the European Court of Human Rights and the WTO Appellate Body, as well as panels established under regional free trade agreements and the WTO Dispute

¹⁶¹ *Continental Shelf (Tunisia/Libya)* (1982) ICJ Reports 18 at 60.

¹⁶² *Gulf of Maine* case (1984) ICJ Reports 246 at 305.

¹⁶³ *Fisheries Jurisdiction* cases (1974) ICJ Reports 3 at 33; Chapter 11, pp. 526–7. ¹⁶⁴ Chapter 6, pp. 221–6.

¹⁶⁵ Jennings and Watts (eds.), *Oppenheim's International Law*, vol. I; M. Shaw, *International Law* (Cambridge: Cambridge University Press, 2008, 6th edn), ch. 3; P. Daillier, M. Forteau and A. Pellet, *Droit International Public* (Paris: LGDJ, 2009, 8th edn); J. Crawford, *Brownlie's Principles of Public International Law* (Oxford: Oxford University Press, 2012, 8th edn), ch. 2; P.-M. Dupuy and Y. Kerbat, *Droit International Public* (Paris: Dalloz, 2014, 12th edn), ch. 1.

¹⁶⁶ Chapter 9, pp. 345–51. ¹⁶⁷ Chapter 14, p. 678.

¹⁶⁸ *Whaling in the Antarctic (Australia v. Japan; New Zealand, intervening)* (2014) ICJ Reports 226; Chapter 11, pp. 536–8.

¹⁶⁹ See further Chapter 11, pp. 526ff.

Settlement Agreement.¹⁷⁰ Awards of international arbitral tribunals have also contributed to the development of international environmental law. Seven stand out in particular: the 1893 decision in the *Pacific Fur Seal* arbitration, the 1941 decision in the much cited *Trail Smelter* case, the 1957 award of the *Lac Lanoux* arbitration, the 2003 award in the *OSPAR Information* case, the 2005 award in the *Iron Rhine* arbitration, the 2013 *Indus Waters Kishenganga* arbitration and the 2015 *Chagos Marine Protected Area* arbitration.¹⁷¹ National courts and tribunals are increasingly faced with the task of interpreting international obligations in this field, and the jurisprudence of these tribunals is becoming an increasingly important source of reference in the development of international environmental law and policy.¹⁷²

The writings of jurists have played a less significant role in developing international environmental law. The *Trail Smelter* case relied on the writings of Professor Eagleton, and there is some evidence that international jurisprudence on environmental issues has been influenced by academic and other writings.¹⁷³ Resolutions of groups of international jurists acting through the International Law Association and the Institut de Droit International have contributed in important ways to the development of subsequent treaty obligations, particularly in the field of water and atmospheric pollution, as will be seen in the chapters that follow.

INTRODUCTION TO REGULATORY APPROACHES

The principles and rules of international environmental law established by treaty and other sources of international law are applied to a range of regulatory techniques. These can broadly be divided into two types: traditional forms of direct regulation (frequently referred to as ‘command-and-control’), and techniques that make use of economic incentives (referred to as ‘economic instruments’).¹⁷⁴ Sometimes included within the latter category is a range of information and incentive-based techniques that make available certain kinds of information to market participants or enhance the incentives markets provide for particular types of behaviour.¹⁷⁵ Awareness of the limited effectiveness of international environmental regulation – particularly in addressing complex environmental problems – has given rise to a third category of regulatory approach, which can be described as ‘integrated environmental management’. Specific examples of this integrated approach include ‘integrated pollution prevention’ (or ‘control’), ‘multi-effect’ (or ‘multi-pollutant’) approaches, and ‘integrated water resources management’. Such approaches initially gained favour at the national level and, through activities principally in Europe and of the OECD, are being taken up at the international level also.

¹⁷⁰ Chapter 5, pp. 186–7; Chapter 18, pp. 843–99.

¹⁷¹ Respectively, Chapter 11, pp. 509–11; Chapter 7, pp. 254–5; Chapter 9, pp. 341–2; Chapter 15, p. 709; Chapter 9, pp. 355–9 and Chapter 11, pp. 560–2.

¹⁷² See generally M. Anderson and P. Galizzi, *International Environmental Law in National Courts* (London: British Institute of International and Comparative Law, 2002).

¹⁷³ See e.g. the Opinions of Judge Weeramantry in the *Nuclear Tests* case (1995) ICJ Reports 34ff. and in the *Gabčíkovo–Nagyymaros* case (1997) ICJ Reports 92–4.

¹⁷⁴ For an illustrative list of regulatory techniques, see Annex II to the 1985 Montreal Guidelines on Land-Based Sources of Pollution, ch. 9. See also D. Driesen, ‘Economic Instruments for Sustainable Development’, in Benjamin J. Richardson and Stephan Wood (eds.), *Environmental Law for Sustainability* (Oxford/Portland, OR: Hart, 2006), 277.

¹⁷⁵ P. N. Grabosky, ‘Green Markets: Environmental Regulation by the Private Sector’, 16(4) *Law and Policy* 419 at 420–1 (1994). Examples include eco-labels and publicly accessible pollutant registers.

The regulatory techniques relied upon in international environmental law are themselves the subject of political and ideological differences. The 1990 Ministerial Declaration of the Second World Climate Conference illustrated the tensions that continue to exist as to the proper balance to be achieved between direct and economic types of regulation, stating that:

Appropriate economic instruments may offer the potential for achieving environmental improvements in a cost-effective manner. The adoption of any form of economic or regulatory measures would require careful and substantive analyses. We *recommend* that relevant policies make use of economic instruments appropriate to each country's socio-economic conditions in conjunction with a balanced mix of regulatory approaches.

The Rio Declaration also reflects support for a balanced approach. Principle 11 indicates that states should enact effective environmental legislation, and that 'environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply'. Principle 16, on the use of economic instruments, suggests only that national authorities should 'endeavour to promote' their use. It is therefore likely that the international use of command-and-control regulation will remain the primary approach, although economic instruments may be favoured to a greater extent in particular contexts where the cost of compliance is seen to be higher (for instance, in the international climate change regime).

Direct Regulation

Under a direct regulatory approach (also called, somewhat pejoratively, 'command-and-control' regulation) the state instructs environmental protection or pollution control bodies to adopt and apply standards that are generally applicable in a uniform manner to their addressees. Once they have been 'commanded', the standards are enforced (or controlled) by public authorities (or, in some jurisdictions, by private persons as well). The environmental standards typically fall into four categories: environmental quality standards; product standards; emissions standards; and technology or process standards.

Environmental Quality Standards

Environmental quality standards prescribe the levels of pollution, nuisance or environmental interference which are permitted and which must not be exceeded in a given environment or particular environmental media. International treaties and other acts frequently use this approach to environmental regulation. The earliest environmental treaties relating to the protection of flora and fauna provided for the designation of areas that were protected from environmental interference.¹⁷⁶ International environmental law establishes a range of environmental quality standards that vary from the absolute prohibition of particular activities in order to

¹⁷⁶ See e.g. 1940 Western Hemisphere Convention, Art. IV under which strict wilderness reserves are to be kept virtually inviolate and the quality of their flora and fauna are to be kept, as far as practicable, pristine. National parks, on the other hand, may be subjected to some environmental interference, although commercial activity is not allowed (Art. III).

maintain environmental and natural resources free from any anthropogenic change, to the more limited acceptance that certain changes in the quality of a given environment are inevitable and may be tolerated as a matter of law. Examples of international acts intended to maintain the environment or parts of it absolutely free from further interference by particular substances or activities include: the prohibitions on the dumping of certain hazardous substances at sea;¹⁷⁷ the moratorium on dumping of all radioactive waste at sea;¹⁷⁸ the moratorium on the killing or taking of whales for commercial purposes;¹⁷⁹ the prohibitions on mining and related activities in the Antarctic;¹⁸⁰ interference with flora and fauna in certain protected areas;¹⁸¹ phase-out of the production and consumption of certain ozone-depleting substances;¹⁸² bans on the production and consumption of certain chemicals;¹⁸³ incineration of wastes at sea;¹⁸⁴ and the import of hazardous waste into Africa and other parts of the developing world.¹⁸⁵

Other environmental quality standards recognise that certain levels of environmental interference are the inevitable consequence of human activity. Rather than prohibit the activity and attempt to establish absolute protection of the environment at its existing level, these standards aim to establish a level beyond which pollution, nuisance or environmental interference is not permitted. Early examples of this approach included the limited protection given to certain areas under wildlife treaties. A similar approach underpins targets for acceptable levels of environmental interference based on 'critical loads' which can be translated into individual country targets.¹⁸⁶ The climate change regime provides perhaps the most prominent example: the 1992 Climate Change Convention establishes the general objective of stabilising levels of greenhouse gas concentrations in the atmosphere at 'a level that would prevent dangerous anthropogenic interference with the climate system' (which has been equated by many in climate science to a global average temperature increase of no more than 2 °C above pre-industrial levels). Subsequent agreements under the Convention, such as the 2015 Paris Agreement, go further, aiming to hold the global average temperature increase to 'well below 2 °C' and 'to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change'.¹⁸⁷

Product Standards

Product standards establish levels for pollutants or nuisances which must not be exceeded in the manufacture or emissions of a product, or specify the properties or characteristics of design of a product, or are concerned with the ways in which a product is used. In the past, this approach was only infrequently applied, as it required a degree of specificity unusual for an international treaty. More recently, however, there has been an increased tendency to target specific industrial activities even at the international level. Examples of product standards in international

¹⁷⁷ Chapter 11, pp. 479ff. ¹⁷⁸ *Ibid.*, pp. 479ff. ¹⁷⁹ Chapter 10, pp. 534–5. ¹⁸⁰ Chapter 13, pp. 633–4.

¹⁸¹ Chapter 10, pp. 409–26. ¹⁸² Chapter 7, pp. 280–2. ¹⁸³ Chapter 12, pp. 580–4.

¹⁸⁴ Chapter 11, see especially p. 472; Chapter 12, pp. 616–17. ¹⁸⁵ Chapter 12, pp. 623–4.

¹⁸⁶ 1988 NO_x Protocol, Art. 2; 1994 Sulphur Protocol, Art. 2(1); 1999 Gothenburg Protocol, Chapter 7, pp. 270–1.

¹⁸⁷ 1992 Climate Change Convention, Art. 2; Paris Agreement, Art. 2(1)(a). See also Chapter 8, pp. 300–30. A different approach to achieving the same objective is reflected in the 1993 Lugano Convention (not in force) which imposes strict liability for an operator carrying out certain hazardous activities, but allows a defence where the operator can prove that damage was caused 'by pollution at tolerable levels under local relevant circumstances'. Implicit in this approach is the recognition that environmental quality standards will have been maintained until a threshold of intolerability has been reached. The Convention does not provide guidance as to when such a threshold will be crossed.

agreements include: the permitted use of certain ozone-depleting substances in manufacture;¹⁸⁸ the use of parts of endangered species in manufacturing;¹⁸⁹ and the construction of oil tankers with 'double hulls'.¹⁹⁰ Product standards also include specifications relating to testing, packaging, marking, labelling and distribution.¹⁹¹

Emissions Standards

Emissions standards set levels for pollutants or nuisances that are not to be exceeded in emissions from installations or activities. Examples of their international use include atmospheric emissions from aircraft,¹⁹² and large industrial utilities,¹⁹³ and control of point source emissions of mercury and mercury compounds.¹⁹⁴

Process Standards

Process standards can be developed and applied to fixed installations and to mobile installations and activities. Two types are frequently used: 'installation design standards', which determine the requirements to be met in the design and construction of installations to protect the environment; and 'operating standards', which determine the requirements to be met in the course of the operation of installations. Examples of process standards in international agreements include: processes for the incineration of hazardous waste;¹⁹⁵ methods and means of conducting fisheries activities¹⁹⁶ (such as driftnet fishing)¹⁹⁷ and the development of biotechnology.¹⁹⁸ 'Process standards' involve the application of particular types of technology, technique and practice. Many international environmental agreements require their use, although the permissibility of applying national standards to processes carried out beyond a state's jurisdiction is subject to limits under WTO law.¹⁹⁹ Examples of obligations imposed upon states include the requirement that they ensure the use of: 'best available techniques';²⁰⁰ or 'best environmental practice';²⁰¹ or 'best available technology';²⁰² or 'clean production methods';²⁰³ or 'environmentally sound management';²⁰⁴ or 'best available technology which is economically feasible'.²⁰⁵

The techniques for implementing these four types of standard at the national level demand a central role for public authorities. It is they who must set the standards (increasingly, by implementing international standards) and implement them through authorising, permitting,

¹⁸⁸ 1987 Montreal Protocol, Chapter 7, pp. 280–2. ¹⁸⁹ 1973 CITES, Chapter 10, pp. 409–17.

¹⁹⁰ 1991 amendments to MARPOL 73/78, Chapter 11, pp. 488–92. ¹⁹¹ Chapter 12, pp. 578–9.

¹⁹² Chapter 7, pp. 275–6. ¹⁹³ *Ibid.*, pp. 259ff. ¹⁹⁴ 2013 Minamata Convention, Art. 8, Chapter 7, pp. 276–7.

¹⁹⁵ 1991 Antarctic Environment Protocol, Chapter 13, pp. 639–43.

¹⁹⁶ 1980 CCAMLR, Chapter 13, pp. 635–6. See also the views of the WTO Appellate Body, Chapter 18, pp. 843–99.

¹⁹⁷ 1989 Driftnet Convention, Chapter 11, pp. 541–2. ¹⁹⁸ 2000 Biosafety Protocol, Chapter 10, pp. 397–403.

¹⁹⁹ See e.g. Chapter 18, p. 848–54 (referred to as 'process and production methods' or PPMs).

²⁰⁰ 1992 OSPAR Convention, Art. 2(3)(b) and Appendix 1; 2001 POPs Convention, Art. 5(e) and Annex C; 2013 Minamata Convention, Art. 8(4).

²⁰¹ 1992 OSPAR Convention, Art. 2(3)(b) and Appendix 1; 1992 Black Sea Convention, Art. 3(3) and Annex II; 2001 POPs Convention, Art. 5(e) and Annex C.

²⁰² 1992 Baltic Convention, Art. 3(3) and Annex II.

²⁰³ 1991 Bamako Convention, Art. 4(3)(g); 1992 OSPAR Convention, Art. 2(3)(b).

²⁰⁴ 1989 Basel Convention, Arts. 2(8) and 4(2)(b); 1995 Waigani Convention, Art. 6(3).

²⁰⁵ 1979 LRTAP Convention, Art. 6; 1988 NO_x Protocol, Art. 2; 1999 Gothenburg Protocol, Arts. 3(6), 3(8)(b) and 4(1)(a) ('best available techniques'), Art. 10(2)(b) ('best available scientific information'); 1998 Aarhus Protocol on Heavy Metals, Annex ('best available techniques').

licensing and receiving information from potential users. Public authorities are also required, under many international environmental agreements, to enforce international standards at the national level through appropriate administrative, judicial and other means.²⁰⁶ Environmental impact assessment and the broad dissemination of information are other techniques that are increasingly used to ensure the implementation of environmental quality, process and product standards.²⁰⁷

Economic Instruments

The use of economic policy instruments to protect the environment has been under discussion for the past three decades as the international community addresses the fact that many environmental regulations have not resulted in environmentally cleaner behaviour, technologies or products. It is contended that traditional direct regulatory mechanisms have failed to provide adequate economic incentives to limit activities that are environmentally damaging and have failed to achieve their environmental objectives. The use of economic instruments is premised on a belief that the market can be used to provide incentives to guide human behaviour:

If environmental resources are properly valued, the costs of using the environment will be taken fully into account in private economic decision-making. This implies that environmental resources are used in 'sustainable' quantities, provided that their prices are based on their scarcity and place an appropriate value on non-renewable resources. Economic instruments are meant to correct current market prices by internalising environmental costs which are treated by the market mechanisms as external.²⁰⁸

Economic instruments 'affect through the market mechanism costs and benefits of alternative actions open to economic agents, with the effect of influencing behaviour in a way which is favourable for the environment'.²⁰⁹

The use of economic instruments at the international level to supplement, or supplant, direct regulatory approaches to environmental protection is supported, at least in principle, by a growing number of states. The practical application nevertheless remains fairly limited, and the record is mixed. In so far as economic instruments are defined by reference to their attempts to use the market to internalise environmental costs, the polluter pays principle first developed by the OECD and the EU in the early 1970s can be seen as a precursor to more recent discussions and proposals.²¹⁰ Explicit references in international acts to 'economic instruments' are a more recent phenomenon. In May 1990, the UNECE Bergen Ministerial Declaration stated that to support sustainable development it would be necessary 'to make more extensive use of economic instruments in conjunction with ... regulatory approaches'.²¹¹ By November 1990, the

²⁰⁶ Chapter 5, p. 148. Sometimes, non-state actors are also granted an enforcement role (*ibid.*).

²⁰⁷ See generally Chapters 14 (EIA) and 15 (information).

²⁰⁸ OECD, *Economic Instruments for Environmental Protection* (1989); 'Report of the Working Group of Experts from the Member States on the Use of Economic and Fiscal Instruments in EC Environmental Policy (1990)', 14 *Boston College International and Comparative Law Review* 447 (1991), 453-4.

²⁰⁹ *Ibid.*, 455. ²¹⁰ Chapter 6, pp. 240-1. On subsidies and competition, see Chapter 18, pp. 894-9.

²¹¹ 7 May 1990; 1985 Montreal Guidelines, Annex II.

Ministerial Declaration of the Second World Climate Conference had found support for similar language at the global level.

Support for the use of economic instruments can also be found in other regional and global declarations such as the Rio Declaration and the WSSD Plan of Implementation.²¹² Agenda 21 refers frequently to the need to develop economic instruments. Support for the use of economic instruments is also reflected in soft law instruments and treaties. Examples include the 1992 Climate Change Convention, which requires developed country parties to coordinate relevant economic instruments,²¹³ and has evolved sophisticated systems of carbon trading under the Kyoto Protocol and REDD+ mechanisms,²¹⁴ and the 1992 Biodiversity Convention, which, although it does not specifically mention economic instruments, calls on parties to 'adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity'.²¹⁵ This approach of linking economic benefits with those provided by healthy ecosystems also underpins the Biodiversity Convention's 2010 Nagoya Protocol on access and benefit-sharing for genetic resources.²¹⁶

What are the different types of economic instruments available? The 1991 OECD Council Recommendation on the Use of Economic Instruments in Environmental Policy was one of the first instruments adopted at the international level to provide guidance on the types of economic instruments available.²¹⁷ It recommended that member countries make greater use of economic instruments, improve the allocation and efficient use of natural and environmental resources, and make efforts to reach further agreement at an international level on the use of economic instruments.²¹⁸ The different types of economic instruments envisaged were set out in the Guidelines and Considerations for the Use of Economic Instruments in Environmental Policy contained in the Annex to the Recommendation.²¹⁹ They include charges and taxes, marketable permits, deposit-refund systems and financial assistance. More recently, a 2004 UNEP publication on 'The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges' characterised economic instruments not by type, but rather by their functional objective in the marketplace.²²⁰ It suggested three main objectives for adoption of economic instruments: first, to redress problems with property rights that contribute to pollution or poor stewardship of resources; second, to establish and enforce prices for resources consumed and environmental damage associated with production; and, third, to subsidise the transition to preferred behaviours.²²¹ On this basis, a wide array of

²¹² WSSD Plan of Implementation, para. 19(b). ²¹³ 1992 Climate Change Convention, Art. 4(2)(e).

²¹⁴ See Chapter 8, pp. 310–13. While the Paris Agreement does not specifically mention market or economic mechanisms, it implies that market mechanisms may be used by parties to meet their emission reduction commitments: Art. 6 allows Parties to pursue 'co-operative approaches' and to voluntarily use 'international transferred mitigation outcomes'.

²¹⁵ 1992 Biodiversity Convention, Art. 11.

²¹⁶ F. Wolff, 'The Nagoya Protocol and the Diffusion of Economic Instruments for Ecosystem Services in International Environmental Governance', in S. Oberthür and G. K. Rosendal (eds.), *Global Governance of Genetic Resources* (Cambridge, MA: MIT Press, 2014), 132.

²¹⁷ C(90)177 (1991). See also the Report of the Working Party on Economic and Environmental Policy Integration, 'Economic Instruments for Pollution Control and Natural Resources Management in OECD Countries: A Survey' (1999), ENV/EPOC/GEEI(98)35/REV1/FINAL.

²¹⁸ Para. I(i)–(iii).

²¹⁹ The OECD and EEA have since developed a database on economic instruments used for environmental policy: see www2.oecd.org/ecoinst/queries

²²⁰ UNEP, 'The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges' (2004), 25.

²²¹ *Ibid.*

mechanisms, extending beyond taxes, charges, marketable permit schemes and financial assistance, may be considered types of economic instruments, including enforcement incentives, administrative charges, liability and compensation for damage, trade measures and consumer information incentives, as well as non-compliance fees and performance bonds. The permissibility of subsidies for environmentally beneficial activities is also premised upon an economic approach to environmental regulation.

Charges and Taxes

The rationale behind charges and taxes is that they create an incentive for polluters to limit activities that can be harmful to the environment, such as emissions, the generation of waste and the excessive use of natural resources. The difference between a charge and a tax reflects the different way in which the revenues are allocated: tax revenues are added to the general public budget, while charge revenues are used specifically to finance environmental measures. Charges can also have different purposes. Emission charges, which are levied on all dischargers, can be levied on discharges of effluents and gases and can be calculated on the basis of the quality and/or quantity of the pollution load. User charges are paid for services rendered by authorities, such as the collection and removal of municipal wastewater and solid and hazardous wastes, and are only paid by persons who receive, or are associated with, the services.

Although widely used at the national level, charges and taxes have not yet been the subject of international legal measures.²²² In May 1992, the first supranational environmental tax was proposed by the EU, to contribute to the implementation of its commitment to stabilise carbon dioxide emissions by the year 2000 at 1990 levels. The European Commission proposal was to harmonise the introduction in the EU member states of a tax on certain fossil fuel products (coal, lignite, peat, natural gas, mineral oils, ethyl and methyl alcohol, electricity and heat),²²³ levying the tax on the basis of carbon dioxide emissions and energy content.²²⁴ The introduction of the tax was, however, conditional upon the introduction by the other OECD members of similar taxes or of measures having a financial impact equivalent to the draft Directive, and was to take account of issues of international competitiveness. The Directive was not adopted and the EU has since proceeded with the implementation of an alternative economic measure for mitigating climate change: an emissions trading scheme.²²⁵

²²² In October 2013, ICAO reached a consensus agreement to develop a 'global MBM [market-based measures] scheme for international aviation' to come into effect from 2020 in an effort to reduce greenhouse gas emissions from the sector (ICAO Assembly, Res. 17/2 (2013), para. 18). Although a MBM scheme might encompass a global carbon tax on aviation, the options being considered by ICAO are instead focused on global offsetting or an ETS.

²²³ EC Commission Proposal for a Council Directive Introducing a Tax on Carbon Dioxide Emissions and Energy, COM (92) 226 final, 30 June 1992, Arts. 1(1) and 3(1) and (2). The draft excluded certain products (*ibid.*, Art. 3).

²²⁴ *Ibid.*, Arts. 1(1) and 9(1).

²²⁵ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC; and see Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009, amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. In July 2015, the European Commission developed a legislative proposal to revise the EU ETS for phase 4 (2021–30). Proposals for a carbon tax on fuels not covered by the ETS continue to be discussed in Europe but have not progressed. See https://ec.europa.eu/clima/policies/ets/revision_en

Tradeable Permit Schemes

The impetus for international law to encourage the use of tradeable permits drew on developments in the United States under the 1990 amendments to the Clean Air Act.²²⁶ According to this approach, regions or utilities are granted a limited number of pollution rights; if they manage to use less than the amount allocated to them, they may sell their excess to another region or utility. Although the idea has generated interest, uptake in international environmental law has been relatively limited, with the notable exception of the international climate change regime. Early environmental agreements allowed parties jointly to implement programmes and measures without specifying any criteria or conditions according to which this is to be achieved,²²⁷ and since they did not establish specific pollution limits there was no intention for interstate trading. The first elements of possible trading were found in certain fisheries agreements (under which 'trade' in quotas may take place) and in Article 2(8) of the 1987 Montreal Protocol, which allows member states of a regional economic integration organisation (which currently only includes the EU) to agree to 'jointly fulfil their obligations respecting consumption' of certain ozone-depleting substances provided that their total combined calculated level of consumption does not exceed the levels required by the Montreal Protocol. The 1992 Climate Change Convention allowed developed country parties and other parties included in Annex I to implement policies and measures required under Article 4(2)(a) and (b) 'jointly with other parties', subject to decisions taken by the Conference of the Parties at its first session 'regarding criteria for joint implementation'.²²⁸ The 1997 Kyoto Protocol provided more detailed provisions on joint implementation,²²⁹ as well as the basis for a system of tradeable permits of various kinds (assigned amount units, emission reduction units, certified emission reductions and removal units), generated through parties' use of the Protocol's three flexibility mechanisms: joint implementation, emissions trading and the Clean Development Mechanism.²³⁰ The 'modalities' subsequently developed by the Kyoto Protocol parties to enable trade in emissions permits, and under the Climate Change Convention for other types of tradeable carbon units such as credits generated under the REDD+ mechanism, demonstrate the complexities – and degree of intrusion – that underlie the operation of such arrangements.²³¹ Their operation is premised on the creation of a common unit of trade (equivalent to the emission of one tonne of carbon dioxide), together with detailed mechanisms for measurement, monitoring, reporting and verification of emission reductions, coupled with stringent non-compliance procedures. In this sense, the use of economic instruments is evidence less of the adoption of a market-based approach in international environmental law than of the emergence of 'legally regulated marketization'.²³²

²²⁶ USC §§ 7401–671 (1988) and amendments in Supp. III to USC (1991). See J. Nash and R. Revesz, 'Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants', 28 *Ecology Law Quarterly* 569 (2001). See generally J. C. Fort and C. A. Faur, 'Can Emissions Trading Work Beyond a National Program?: Some Practical Observations on the Available Tools', 18 *University of Pennsylvania Journal of International Economic Law* 463 (1997); J. R. Nash, 'Too Much Market? Conflict Between Tradeable Pollution Allowances and the "Polluter Pays" Principle', 24 *Harvard Environmental Law Review* 465 (2000); R. B. Stewart, J. L. Connaughton and L. C. Foxhall, 'Designing an International Greenhouse Gas Emissions Trading System', 15 *Natural Resources and Environment* 160 (2001); J. Yelin-Kefer, 'Warming Up to an International Greenhouse Gas Market: Lessons from the US Acid Rain Experience', 20 *Stanford Environmental Law Journal* 221 (2001).

²²⁷ 1974 Paris Convention, Art. 4(2). ²²⁸ Art. 4(2)(a) and (d).

²²⁹ Art. 4; see A. Gosseries, 'The Legal Architecture of Joint Implementation', 7 *New York University Environmental Law Journal* 49 (1999).

²³⁰ Arts. 6, 12 and 17. See Chapter 8, pp. 310–13. ²³¹ See *ibid.*

²³² J. Braithwaite and C. Parker, 'Conclusion', in J. Braithwaite, N. Lacey, C. Parker and C. Scott (eds.), *Regulating Law* (Oxford: Oxford University Press, 2004), 269 at 269.

Deposit-Refund Systems

Deposit-refund systems require a deposit to be paid on potentially polluting products, such as batteries, bottles and other packaging and car hulks. The return of the product or its residuals is intended to avoid pollution and is compensated by a refund of the deposit. The system is frequently used at the national level but has not yet been used at the international level.²³³

Subsidies

Governments often seek to justify the grant of subsidies that might otherwise be unlawful on the grounds that they bring environmental benefits.²³⁴ They can nevertheless distort competition and run against the inherent purpose of the polluter pays principle and may, on those grounds, fall foul of international competition and trade rules. A more complicated case arises in the context of measures to promote renewable energy technologies (such as feed-in tariffs) or to offset the adverse competitive effects on domestic industry of national greenhouse gas emissions trading schemes. Do such measures, adopted to address the problem of climate change, amount to a prohibited subsidy under WTO law? These issues were considered by the WTO dispute settlement system in challenges brought by Japan and the EU to the Ontario feed-in tariff programme for renewable energy.²³⁵ International practice under the WTO on the environmental aspects of subsidies is considered further in Chapter 18.

Enforcement Incentives

Enforcement incentives, such as non-compliance fees and performance bonds, are closely linked to fiscal regulation. Non-compliance fees penalise polluters who exceed prescribed environmental standards, and performance bonds are payments to authorities that are returned when the polluter performs in accordance with its licence. Enforcement incentives in the form of non-compliance fees have not been the subject of international legal measures, although similar mechanisms have emerged. For example, measures that may be taken by a Meeting of the Parties in respect of non-compliance with the Montreal Protocol include, inter alia, suspending specific rights and privileges under the Protocol such as those relating to the receipt of funds under the financial mechanism.²³⁶ The Kyoto Protocol non-compliance mechanism also makes explicit provision for a make good requirement in the event of a finding of non-compliance with

²³³ The POPs Convention does, however, make several references to recycling, such as in Part V(A)(c) where 'the promotion of the recovery and recycling of waste and of substances generated and used in a process' is listed as a general prevention measure which should be prioritised. Part V(A)(f) also notes that '[w]hen considering proposals to construct new waste disposal facilities, consideration should be given to alternatives such as activities to minimize the generation of municipal and medical waste, including resource recovery, reuse, recycling, waste separation and promoting products that generate less waste'.

²³⁴ Governments also often provide subsidies to activities and industries that produce environmental harm, such as fossil fuel subsidies. At the Paris COP21 negotiations under the Climate Change Convention, forty nations signed the Fossil Fuel Subsidy Reform Communiqué calling for the elimination of fossil fuel subsidies: see <http://ffsr.org/> communiqué. The 2015 Paris Agreement does not directly address the question of fossil fuel subsidies although it articulates parties' aim to reach global peaking of emissions 'as soon as possible' and to achieve 'a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century' (Art. 4(1)).

²³⁵ WTO Dispute DS412, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector*, Report of the Appellate Body (6 May 2013) (brought by Japan); DS426 *Canada – Measures Relating to the Feed-in Tariff Program*, Report of the Appellate Body (6 May 2013) (brought by the European Union).

²³⁶ Fourth Report of the Parties to the Montreal Protocol. UNEP/OzL.Pro.4/15, 25 November 1992, 48 (Annex V); see Chapter 5, p. 172.

an Annex I party's emission reduction target. Decision 27/CMP.1 specifies that the Enforcement Branch may require a defaulting party to make good any shortfall in emission reductions in a subsequent commitment period together with imposing an additional deduction of 30 per cent.²³⁷

Liability and Compensation for Damage

One of the objectives of the rules of international law establishing civil and state liability for environmental and related damage is the establishment of economic incentives for complying with international environmental obligations. As will be seen in Chapter 16, however, the limited state of development of the rules of state liability, and the low financial limits on liability established by most of the international civil liability conventions do not properly fulfil the incentive functions.

Trade Measures

Regulations and prohibitions on international trade were among the first economic instruments to be used at the international level in aid of environmental protection objectives, and are considered in Chapter 18. They are designed to influence behaviour (i.e. not killing endangered species or not producing or consuming certain harmful substances) by limiting the availability of markets for certain products or by making the availability of markets dependent upon participation in an international regulatory arrangement. Despite their evident attractiveness to government environmental departments as an efficient and effective means to achieve environmental objectives, trade measures remain controversial, and are subject to a trade regime under the WTO that raises questions as to the circumstances in which they may be relied upon.

Investment Incentives

Over the past few decades, increased attention has been given to identifying incentives for directing investment in clean technologies towards developing countries and countries with economies in transition. The most elaborate arrangement is the Clean Development Mechanism established under the Kyoto Protocol, which provides credits to states whose companies invest in certain greenhouse gas reduction activities in developing countries.²³⁸ The UNFCCC mechanism for reducing emissions from deforestation and forest degradation (REDD+)²³⁹ operates in a similar fashion by incentivising activities to preserve and sustainably manage forests in developing countries by making the credits earned through such activities tradeable in the global carbon market.²⁴⁰ Other arrangements aim to provide financial resources to developing countries to invest in certain clean technologies pursuant to the ozone and biodiversity agreements.²⁴¹

²³⁷ Decision 27/CMP.1: Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol, Report of the COP serving as the MOP to the Kyoto Protocol, Montreal, 28 November–10 December 2005, FCCC/KP/CMP/2005/8/Add.3, 30 March 2006.

²³⁸ Chapter 8, pp. 310–13. ²³⁹ Chapter 8, pp. 313–14.

²⁴⁰ See C. Parker, A. Mitchell, M. Trivedi and N. Mardas, *The Little REDD+ Book: An Updated Guide to Governmental and Non-Governmental Proposals for Reducing Emissions from Deforestation and Degradation* (2009); see also UNFCCC, Decision Booklet REDD+, containing all relevant UNFCCC decisions on REDD+ including those of the Warsaw Framework for REDD+ concluded at COP19, available at http://unfccc.int/land_use_and_climate_change/lulucf/items/6917.php

²⁴¹ See Chapter 7, pp. 280ff. and Chapter 10, pp. 388ff.

Voluntary Approaches

Alongside legislative and economic instruments, there has also been a growing use of voluntary approaches to supplement regulatory requirements, i.e. agreements on environmental performance negotiated with industry and public programmes in which firms can volunteer to participate.²⁴² A prominent example is OECD's Guidelines for Multinational Enterprises, which provide voluntary principles and standards for responsible business conduct in various areas, including with respect to the environment.²⁴³ Another example is the voluntary carbon market that operates alongside regulated carbon markets such as the EU ETS and emissions trading under the Kyoto Protocol. Carbon credits traded on the voluntary carbon market are generated by governments, companies or other organisations undertaking emissions reduction or avoidance activities. These credits are sold to individuals or entities wishing to offset carbon-generating activities, e.g. passengers on international airline flights. Credits are certified by private certification bodies such as the Verified Carbon Standard and the Gold Standard.²⁴⁴ While the voluntary carbon market, and voluntary approaches more generally, are seen as a useful supplement to regulatory mechanisms,²⁴⁵ concerns remain over monitoring, verification and compliance.²⁴⁶

Consumer Information Incentives

Consumer information incentives targeting the environmental performance of companies, such as eco-labelling and eco-auditing, are designed to capitalise on the perception that many consumers take environmental considerations into account when buying products and services. In 1992, the EU adopted the first international eco-labelling scheme, which now extends to a wide variety of products and services, including cleaning products, appliances, paper products, textiles, home and garden products, lubricants and tourist accommodation.²⁴⁷ The EU also maintains a labelling regime for food and feed products produced from genetically modified organisms.²⁴⁸ The compatibility of domestic eco-labelling schemes with WTO rules and other international trade agreements continues to be an area of uncertainty in international trade law,²⁴⁹ with a series of rulings under the WTO dispute settlement system in the long-running *Tuna/Dolphin* dispute between the United States and Mexico indicating stringent requirements for eco-labels to meet trade requirements.²⁵⁰

²⁴² In 2000, the OECD published a survey of environmental agreements, identifying more than 300 such agreements in the EU alone: OECD, *Voluntary Approaches for Environment Policy – An Assessment* (2000). For a more recent assessment of the efficacy and efficiency of such approaches, see OECD, *Voluntary Approaches for Environmental Policy – Effectiveness, Efficiency and Usage in Policy Mixes* (Paris, 2003).

²⁴³ See Chapter 3, pp. 92–3.

²⁴⁴ See further, N. Taiyab, *Exploring the Market for Voluntary Carbon Offsets* (London: International Institute for Environment and Development, 2006); A. Kollmus et al., *Making Sense of the Voluntary Carbon Market: A Comparison of Carbon Offset Standards* (WWF Germany, 2008).

²⁴⁵ For example, in 1996, the European Commission published a Communication on Environmental Agreements, which identified potential benefits as including a proactive approach by industry, cost-effectiveness and tailor-made solutions, and the faster achievement of environmental objectives: COM (96) 561 final, 2 July 1996.

²⁴⁶ See e.g. M. Gillenwater et al., 'Policing the voluntary carbon market', 6 *Nature Reports Climate Change* 85 (2007).

²⁴⁷ www.ecolabel.eu. See further Chapter 15, pp. 716–17. ²⁴⁸ Regulation 1830/2003.

²⁴⁹ See e.g. Ilona Cheyne, 'Proportionality, Proximity and Environmental Labelling in WTO Law', 12(4) *Journal of International Economic Law* 927 (2009).

²⁵⁰ See, most recently, *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, DS381, Report of the Appellate Body, 20 November 2015. For a history of the *Tuna/Dolphin* dispute and the eco-labelling questions it raised, see further Chapter 15, pp. 716–17 and Chapter 18, pp. 854–70.

Integrated Environmental Management

The continuous increase in pollution levels and environmental degradation provides evidence of the failure of traditional lawmaking adequately to change human behaviour and patterns of production and consumption. The traditional approach to environmental regulation has been to address particular activities, substances or environmental media (air, water, soil and biota), and to focus pollution control and prevention efforts on each environmental medium. In reality, different substances and activities can move among, and have effects upon, a range of environmental media. In the case of some pollutants, as they travel along a 'pathway' from a particular source to a particular receptor, they may accumulate in the environment. The regulation and establishment of controls over releases of a substance to one environmental medium can lead to that substance being shifted to another environmental medium.²⁵¹ Similarly, management of one environmental problem, such as climate change, without reference to its broader environmental effects, may mean that regulations adopted for the purpose of climate change mitigation exacerbate other environmental problems, such as biodiversity loss or water scarcity. In the environmental policy literature, these kinds of complex and integrated environmental issues have been termed 'wicked problems', which are seen to require innovative and broadly based regulatory approaches.²⁵²

In the early 1990s, some states began to recognise that efforts to address each environmental medium separately may not be an efficient or effective way to protect the environment. Beginning at the national level, some began to rely upon strategies such as 'integrated pollution prevention (or control)', which was defined in 1991 by the OECD Council as:

taking into account the effects of activities and substances on the environment as a whole and the whole commercial and environmental life-cycles of substances when assessing the risks they pose and when developing and implementing controls to limit their release.²⁵³

The 1991 OECD Council Recommendation called on OECD member countries to support integrated pollution prevention and control by addressing impediments to an integrated approach, removing those impediments, and adopting appropriate new laws and regulations, taking account of the Guidance on Integrated Pollution Prevention and Control set out in the Appendix to the Recommendation.²⁵⁴ The Guidance set out, for the first time in an international instrument, a detailed approach to implementing integrated pollution prevention and control and preventing or minimising the risk of harm to the environment taken as a whole; it recognised the integrated nature of the environment by taking account of the substances or activities on all the environmental media (air, water, soil), the living organisms (including people) that these media support, and the stock of cultural and aesthetic assets.²⁵⁵ The Guidance

²⁵¹ This is recognised by a number of international environmental agreements which include provisions requiring parties not to transfer pollution or environmental damage elsewhere in the implementation of their treaty obligations (e.g. 1974 Baltic Convention, Art. 3(2); 1982 UNCLOS, Art. 195).

²⁵² Australian Public Service Commission, *Tackling Wicked Problems: A Public Policy Perspective* (2007).

²⁵³ OECD Council Recommendation on Integrated Pollution Prevention and Control, C(90)164/FINAL (1991), para. I(a).

²⁵⁴ Guidance on Integrated Pollution Prevention and Control, Appendix to 1991 OECD Council Recommendation (*ibid.*, para. I(b) and (c)).

²⁵⁵ *Ibid.*, para. 1.

identified five important elements of an integrated approach: the 'cradle-to-grave' concept; the anticipation of effects in all environmental media of substances and activities; the minimisation of waste quantity and harmfulness; the use of a common means to estimate and compare environmental problems (such as risk assessment); and the complementary use of effects-oriented measures (environmental quality objectives) and source-oriented measures (emission limits).²⁵⁶

In a similar vein are notions of integrated environmental or natural resources management that recognise the interdependence of ecosystems and guard against the problem of cumulative effects.²⁵⁷ A prominent example is integrated water resource management (IWRM), which was endorsed by the WSSD Plan of Implementation²⁵⁸ and is a focus of activity for UN-Water, the UN's interagency mechanism for freshwater issues. The Global Water Partnership's widely accepted definition of IWRM is

a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.²⁵⁹

These broader, more holistic approaches to environmental regulation and protection are now reflected in a number of international instruments. In 1992, the Oslo and Paris Commissions endorsed an integrated approach by addressing particular industrial sectors and activities.²⁶⁰ Chapter 10 of Agenda 21 also endorsed an approach of integrated land resources management,²⁶¹ which has been implemented in treaties such as the 2003 Framework Convention on the Protection and Sustainable Development of the Carpathians.²⁶² In 1996, the EU adopted the first international rules on integrated pollution control, which are now reflected in Directive 2008/1/EC on integrated pollution prevention and control. Moves towards integrated pollution control are also evident in the 1999 Gothenburg Protocol to the LRTAP Convention that applies a 'multi-effect, multi-pollutant approach' to preventing the exceedance of critical loads and levels for covered pollutants contributing to acidification, eutrophication and ground-level ozone.

As the 1991 OECD Recommendation recognised, certain changes to policy settings are 'essential to an effective integrated approach', including sustainable development, the use of no- or low-waste technology and recycling strategies, cleaner technologies and safer substances, precautionary action, public information, the integration of environmental considerations into private and public decision-making, and consistent and effective compliance and enforcement policies.²⁶³ An integrated approach shifts the focus of decision-making to a combination of the substances, the sources (including processes, products and economic sectors) and the geographical regions and requires changes in institutional arrangements, management instruments and technical methods. New institutional arrangements for integrated pollution or environmental

²⁵⁶ *Ibid.*

²⁵⁷ K. S. Hanna and D. S. Slocombe (eds.), *Integrated Resource and Environmental Management: Concepts and Practice* (Oxford/Toronto: Oxford University Press, 2007); J. Cairns Jr and T. V. Crawford (eds.), *Integrated Environmental Management* (Chelsea, MI: Lewis, 1991).

²⁵⁸ WSSD Plan of Implementation, para. 66.

²⁵⁹ Global Water Partnership, 'What Is IWRM?', at www.gwp.org/en/About/why/the-need-for-an-integrated-approach

²⁶⁰ 1992 Action Plan of the Oslo and Paris Commissions, Appendix A, in LDC 15/INF.11, Annex 3, 2 October 1992.

²⁶¹ United Nations Division for Sustainable Development, *Agenda 21* (1992), Chapter 10, A/CONF.151/26/REV.1(VOL.II).

²⁶² Art. 3. ²⁶³ OECD Integrated Pollution Recommendation, n. 253, para. 2.

management would require the establishment of coordinating mechanisms within and among government bodies and international cooperative arrangements within and among different levels of government within countries.²⁶⁴ Management instruments might include the following: issuing single permits which cover all releases and processes; linking environmental instruments with land-use planning and natural resource management; undertaking environmental impact assessments for policy proposals and projects (strategic environmental assessment); establishing integrated inspection and enforcement authorities; using economic instruments; encouraging and/or subsidising cleaner technologies; and covering whole lifecycle issues in the development of industry management plans.²⁶⁵ An integrated approach to technical methods would encompass such things as lifecycle analysis (from design through manufacture to disposal), analysis of multiple pathways of exposure, the use of inventories of releases and inputs, and more effective monitoring of the condition of environmental media, the biota they support, and the condition of cultural and aesthetic assets.²⁶⁶ The necessity for such changes remains equally apparent with regard to international institutions, in respect of both their internal practices and their external relations.

CONCLUSIONS

From the discussion in this chapter of the different sources of international legal obligation and available regulatory techniques, it will be evident that the principles and rules of international environmental law are set forth or reflected in tens of thousands of acts adopted at the national, bilateral, subregional, regional and global levels. There is no international legal text which sets out the principles and rules which are of general application, and it is unlikely that one will be adopted in the foreseeable future. The lack of a central legislative authority, or of a coherent set of international legislative arrangements, has resulted in a lawmaking process and a body of rules that are ad hoc, piecemeal and fragmented. The limitations of existing arrangements are well known, and there remains a real need to establish a coherent framework for the coordination of existing rules and the development of new rules. The UNCED process could have contributed to such a framework, by addressing three priority needs: to establish improved mechanisms for identifying critical issues and priorities for lawmaking; to ensure that all relevant actors (in particular, developing countries) are able to participate fully and effectively in the international lawmaking process, including the negotiation, implementation, review and governance of international environmental agreements or instruments; and to rationalise the international lawmaking process by improving coordination between international organisations and their secretariats, in particular those established by environmental agreements. In the more than twenty years since UNCED, however, it has become apparent that there is an absence of the political will that would be required to overhaul existing international structures.

It will also be clear from this chapter that the limitations and inadequacies of existing techniques for applying standards established by international principles and rules (principally by so-called 'command-and-control' methods) are, and should continue to be, the subject of critical international scrutiny. Developments since UNCED confirm that environmental

²⁶⁴ *Ibid.*, para. 5. For example, river basin organisations established to match hydrological rather than political boundaries.

²⁶⁵ *Ibid.*, para. 6. ²⁶⁶ *Ibid.*, para. 7.

protection will not be achieved merely by the adoption of a vast body of regulatory obligations. These regulations need fine-tuning, and they may need to be supplemented by introducing and applying a broad range of equitable and effective economic instruments which can provide incentives to improve compliance without exacerbating social injustice, and which take account of the need to ensure that the poorer members of the international community are not disproportionately affected. So far, however, there has been little practical experience at the international level with the use of economic instruments, with the exception of emissions trading under the Kyoto Protocol and in the EU, and more work needs to be done to explore the implications and practical consequences of the various proposed arrangements. The limited experience to date suggests that legal and institutional issues of considerable complexity arise if economic theories are to be translated into practical, acceptable and effective international legal obligations and arrangements. Even so, efforts to devise new economic approaches will no doubt continue, supplemented by the obviously necessary move away from single-sector environmental regulation towards a more integrated approach to pollution prevention and natural resources management which seeks to address all environmental media on a comprehensive basis, and all products on a cradle-to-grave basis. Each of these new initiatives poses challenges to the international legal order. However, it is becoming increasingly clear that more integrated and more diverse regulatory approaches are an important component of the task of adapting international environmental law to respond adequately to the challenge of inherent and fundamental interdependence in the world environment.

FURTHER READING

General resources on international environmental regulation and treaties:

- R. Hahn and K. Richards, 'The Internationalisation of Environmental Regulation', 30 *Harvard International Law Journal* 421 (1989);
- O. Schachter, 'The Emergence of International Environmental Law', 44 *Journal of International Affairs* 457 (1991);
- W. Lang, 'Diplomacy and International Environmental Law-Making: Some Observations', 3 *Yearbook of International Environmental Law* 108 (1992);
- U. Beyerlin and T. Marauhn, 'Law-Making and Law-Enforcement in International Environmental Law after the 1992 Rio Conference' (Berichte 4/1997);
- P. Sands, 'The New Architecture of International Environmental Law', 30 *RBDI* 512 (1997);
- A. Ahmad, *Cosmopolitan Orientation of the Process of International Environmental Lawmaking: An Islamic Law Genre* (2001);
- W. B. Chambers, 'Towards an Improved Understanding of Legal Effectiveness of International Environmental Treaties', 16 *Georgetown International Environmental Law Review* 501 (2004);
- G. Nagtzaam, *The Making of International Environmental Treaties: Neoliberal and Constructivist Analyses of Normative Evolution* (2009);
- L. Godden and J. Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (2010);
- B. Desai, *Multilateral Environmental Agreements: Legal Status of the Secretariats* (2010)

The main collections of treaties are:

- *Consolidated Treaty Series* (C. Parry (ed.), 1648–1918);
- *League of Nations Treaty Series* (205 vols., 1920–46); and
- *United Nations Treaty Series* (since 1946) (online at <https://treaties.un.org>)

Important environmental treaties are also regularly reproduced in *International Legal Materials*. Relevant national treaty collections include:

- *United Kingdom Treaty Series* (since 1892);
- *European Union Treaty Series* (since 1974); and
- *United States' Treaties and Other International Agreements Series* (13 vols., 1776–1949, and annually thereafter)

Resources on customary international environmental law:

- I. Brownlie, 'A Survey of International Customary Rules of Environmental Protection', 13 *Natural Resources Journal* 179 (1973);
- P.-M. Dupuy, 'Overview of Existing Customary Legal Regime Regarding International Pollution', in D. Magraw (ed.), *International Law and Pollution* (Philadelphia, PA: University of Pennsylvania Press, 1991);
- D. Bodansky, 'Customary (and Not So Customary) International Environmental Law', 3 *Indiana Journal of Global Legal Studies* 105 (1995).

For state practice relevant to discerning customary international law, see the country/region reports in Part 2 (the Year in Review) of the *Yearbook of International Environmental Law*.

Resources on economic instruments and their application in international environmental regulation:

- OECD, *Economic Instruments for Environmental Protection* (1989);
- 'Report of the Working Group of Experts from the Member States on the Use of Economic and Fiscal Instruments in EC Environmental Policy (1990)', 14 *Boston College International and Comparative Law Review* 447 (1991);
- R. Hahn and R. Stavins, 'Incentive-Based Environmental Regulation: A New Era from an Old Idea?', 18 *Ecology Law Quarterly* 1 (1991);
- OECD, *Guidelines for the Application of Economic Instruments in Environmental Policy* (1991);
- R. Wolfrum (ed.), *Enforcing Environmental Standards: Economic Mechanisms as Viable Means* (Berlin: Springer, 1996);
- P. Galizzi, 'Economic Instruments as Tools for the Protection of the International Environment', 6 *European Environmental Law Review* 155 (1997);
- K. Bosselmann and B. Richardson, *Environmental Justice and Market Mechanisms* (The Hague/London: Kluwer, 1999);
- R. Stewart and P. Sands, 'The Legal and Institutional Framework for a Plurilateral Greenhouse Gas Emissions Trading System', in UNCTAD, *Greenhouse Gas Market Perspectives, Trade and Investment Implications of Climate Change* (2001), 82;
- UNEP, *The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges* (2004);
- D. Driesen, 'Economic Instruments for Sustainable Development', in B. Richardson and S. Woods (eds.), *Environmental Law for Sustainability* (Portland, OR/Oxford: Hart, 2006), 277;
- T. H. Tietenberg, *Emissions Trading: Principles and Practice* (2006).

5

Compliance: Implementation, Enforcement, Dispute Settlement

CHAPTER OUTLINE

States have accepted numerous obligations – under treaty law, custom and through international organisations – committing them to safeguard environmental resources in various ways. This chapter discusses three key elements of states' compliance with international environmental law, which largely determine its effectiveness in protecting the environment:

1. Implementation: involving the translation of international obligations into national law, enforcement against domestic actors and reporting of results;
2. International enforcement: conceived in terms of which states or entities have the right to take measures to ensure the fulfilment of states' international environmental obligations; and
3. International dispute settlement: covering methods and institutions available to resolve disputes over compliance with international environmental law, ranging from mediation, to non-compliance mechanisms and enforcement actions before international courts.

INTRODUCTION

Ensuring compliance by members of the international community with their international environmental obligations continues to be a matter of serious concern.¹ This is reflected in the attention the issue received at UNCED, in the negotiation and implementation of environmental agreements, and in the growing number of environmental disputes brought before international judicial bodies. The relevance of environmental concerns to international peace and security was affirmed by the UN Security Council in January 1992, when its members declared that 'non-military sources of instability in the . . . ecological fields have become threats to international peace and security'.² The response to those concerns has included the development of existing

¹ See generally D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), ch. 7; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), chs. 42, 43 and 45; D. Bodansky, *The Art and Craft of International Environmental Law* (Cambridge, MA/London: Harvard University Press, 2010), ch. 11; M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010), Part VI; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), ch. 4.

² Note by the President of the Security Council, 31 January 1992, UN Doc. S23500, 2 (1992).

mechanisms for implementation, enforcement and dispute settlement (such as the specialised rules for arbitrating environmental disputes promulgated by the Permanent Court of Arbitration in 2001), as well as novel approaches such as the non-compliance mechanisms established under a number of environmental agreements, and the role given to the UN Compensation Commission over environmental claims.³

Of the reasons proffered for renewed efforts, at least three are especially relevant. First, it is apparent that states are taking on ever more international environmental commitments, of increasing stringency. Second, the growing demands on access to finite natural resources, such as freshwater and fish, provide fertile conditions for conflicts over the use of natural resources. And, third, as international environmental obligations increasingly intersect with economic interests, states that do not comply with their environmental obligations are perceived to gain unfair competitive advantage from non-compliance. Non-compliance is seen to be important because it limits the effectiveness of legal commitments, undermines the international legal process, and can lead to conflict and instability in the international order. It occurs for different reasons,⁴ and it is widely recognised that the underlying causes require further attention so that existing and new international legal obligations are crafted to ensure their effective implementation. At UNCED, attention was focused on mechanisms to *prevent* disputes and to resolve them peacefully when they arise. Subsequent efforts have reflected a desire to address enforcement and dispute settlement in a non-contentious and non-adversarial manner.

Non-compliance can include a failure to give effect to substantive norms (e.g. to limit atmospheric emissions of sulphur dioxide or greenhouse gases as required by treaty or to allow transboundary emissions of hazardous substances or gases in violation of any rules of customary law); or to fulfil procedural requirements (e.g. to carry out an environmental impact assessment or to consult with a neighbouring state on the construction of a new plant); or to fulfil an institutional obligation (e.g. to submit an annual report to an international organisation). Non-compliance raises three distinct but related issues relating to implementation, enforcement and conflict resolution (traditionally referred to by international lawyers as 'dispute settlement'). These are:

- (1) What formal or informal steps must be taken to implement a state's international legal obligations?
- (2) What legal or natural person may enforce international environmental obligations of other states?
- (3) What techniques, procedures and institutions exist under international law to resolve conflicts or settle disputes over alleged non-compliance with international environmental obligations?

Over the years, a range of techniques has been adopted and used to improve compliance with environmental obligations, drawing upon other developments in international law. A number of techniques and practices specific to environmental matters have also been developed. Despite the emergence of the concept of 'environmental security',⁵ the legal issues relating to the

³ Chapter 16, pp. 755ff.

⁴ Non-compliance may occur for a variety of reasons, including a lack of institutional, financial or human resources, and differing interpretations as to the meaning or requirements of a particular obligation.

⁵ See e.g. Simon Dalby, *Environmental Security* (Minnesota: University of Minnesota Press, 2002); A. Timoshenko, 'Human and Environmental Security: An Agenda for Change', 16(1) *Review of European Community and International*

environment concerning implementation, enforcement and dispute settlement are not dissimilar to those of one hundred years ago.⁶ Since the *Fur Seal* arbitration of 1893, a considerable number of environmental disputes have been submitted to international dispute resolution arrangements, and the rate of submission appears to have increased significantly within the past two decades. These disputes have addressed a broad range of issues, including: transboundary air pollution;⁷ the diversion of the flow of international rivers;⁸ conservation of fisheries resources and other marine species;⁹ protection of the marine environment;¹⁰ import restrictions adopted to enforce domestic conservation standards;¹¹ the relationship between environmental laws and foreign investment protection treaties;¹² access to environmental information;¹³ procedural obligations relating to notification of information and consultation;¹⁴ environmental impact assessment;¹⁵ responsibility for rehabilitation of mined lands;¹⁶ transboundary effects of pesticide spraying;¹⁷ environmental obligations in relation to seabed activities;¹⁸ the definition of scientific whaling;¹⁹ and the legality of a marine protected area.²⁰ Decided cases illustrate the availability of a growing range of fora for the resolution of disputes over environment and natural resources. In the context of the dispute over the Gabčíkovo–Nagymaros barrages, Hungary and Slovakia explored a range of enforcement and dispute settlement options, including unilateral reference to the ICJ, arbitration, conciliation by the European Commission, and the emergency procedures of the Conference on Security and Co-operation in Europe (CSCE), before they agreed to settle the dispute at the ICJ.²¹ The dispute between Ireland and the United Kingdom concerning the MOX plant at Sellafield was litigated at ITLOS, the ECJ and two separate arbitral tribunals (OSPAR and UNCLOS), and other

Environmental Law 111 (2007); J. T. Matthews, 'Redefining Security', 68 *Foreign Affairs* 163 (1989); A. Timoshenko, 'Ecological Security: Global Change Paradigm', 1 *Colorado Journal of International Environmental Law and Policy* 127 (1990); G. Handl, 'Environmental Security and Global Change: The Challenge to International Law', 1 *Yearbook of International Environmental Law* 3 (1990); K. Hulme, 'Environmental Security: Implications for International Law', 19 *Yearbook of International Environmental Law* 3 (2008); C. Webersik, *Climate Change and Security: A Gathering Storm of Global Challenges* (Santa Barbara, CA: Praeger, 2010).

⁶ See the *Fur Seal* arbitration (*Great Britain v. United States*) (1893), ch. 11, pp. 509–11.

⁷ *Trail Smelter* case, Chapter 7, pp. 254–5.

⁸ *Lac Lanoux* arbitration (1957), Chapter 9, pp. 341–2, *Gabčíkovo–Nagymaros Project* case, Chapter 9, pp. 345–51; *Indus Waters Arbitration* (2013), Chapter 9, pp. 355–9.

⁹ *Fisheries Jurisdiction* case (1974), Chapter 11, p. 526; *Southern Bluefin Tuna* cases, Chapter 11, pp. 528–9; *Coastal and Flag State Duties to Ensure Sustainable Fisheries Management* (Advisory Opinion) (2015), Chapter 11, pp. 546–8.

¹⁰ *New Zealand v. France* (1995), Chapter 7, p. 255; *MOX* case, Chapter 12, p. 599.

¹¹ *Tuna/Dolphin* decisions, Chapter 18, p. 855; *Shrimp/Turtle* case, Chapter 18, pp. 859–65; *Brazil Retreaded Tyres* case, Chapter 18, pp. 869–71.

¹² *Metalclad v. Mexico*, Chapter 18, pp. 906–9, and *Methanex v. United States*, Chapter 18, pp. 909–10.

¹³ *MOX* OSPAR case, Chapter 11, p. 473. ¹⁴ *Pulp Mills* case, Chapter 9, pp. 351–5.

¹⁵ *Gabčíkovo–Nagymaros* case, Chapter 9, pp. 345–51; *MOX* case, Chapter 11, p. 473.

¹⁶ *Certain Phosphate Lands in Nauru* case, Chapter 12, p. 606.

¹⁷ *Aerial Herbicide Spraying*, Chapter 7, p. 256 (this case was withdrawn by Ecuador in 2013).

¹⁸ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011), Chapter 11, pp. 498–9.

¹⁹ *Whaling in the Antarctic* case, Chapter 11, pp. 536–8.

²⁰ *Dispute Regarding the Marine Protected Area (Mauritius v. UK)* (2015), Chapter 11, pp. 355–9.

²¹ A mechanism for consultation and cooperation in emergency situations was adopted by the Berlin Meeting of the CSCE Council in June 1991. The mechanism comprises a process of exchange of information between the states involved, which if unsuccessful may lead to a special meeting of the Committee of Senior Officials, who may then refer the matter to a meeting at ministerial level. If the process does not resolve the situation, the dispute may be referred to the Procedure for Peaceful Settlement of Disputes, involving the Conflict Prevention Centre: see Summary of Conclusion, 30 ILM 1348 (1991), Annexes 2 and 3.

fora (including the ECHR and the ICJ) were also available. Historically, the available mechanisms were under-utilised, leaving it unclear whether they would be able to deal with the growing range of environmental issues that may require resolution. More recently, however, there has been an increasing willingness on behalf of states to invoke these traditional procedures, which have demonstrated an ability to contribute to the resolution of contentious disputes and, in the process, to the development of the rules of international environmental law.

IMPLEMENTATION

States implement their international environmental obligations in three distinct phases. First, by adopting national implementing measures; second, by ensuring that national measures are complied with by those subject to their jurisdiction and control; and, third, by fulfilling obligations to the relevant international organisations, such as reporting the measures taken to give effect to international obligations.²²

National Law

Once a state has formally accepted an international environmental obligation, usually following the entry into force of a treaty which it has ratified or the act of an international organisation by which it is bound, it will usually need to develop, adopt or modify relevant national legislation, or give effect to national policies, programmes or strategies by administrative or other measures. Some treaties expressly require parties to take measures to ensure the implementation of obligations,²³ or to take appropriate measures within their competence to ensure compliance with the convention and any measures in effect pursuant to it.²⁴ Numerous agreements require parties to designate a competent national authority or focal point for international liaison purposes to ensure domestic implementation.²⁵ The 1982 UNCLOS provides a typical example, its provisions being drawn from different precedents in the field of marine pollution. It includes provisions on implementation of pollution requirements from different sources, and provides specifically for the enforcement by states of their laws and regulations adopted in accordance with the Convention and the implementation of applicable international rules and standards.²⁶ It also requires states to ensure that recourse is available under their legal system for prompt and adequate compensation for damage caused by marine pollution by persons under their jurisdiction.²⁷

²² See generally D. Victor, K. Raustiala and E. Skolnikoff (eds.), *The Implementation and Effectiveness of International Environmental Commitments* (Cambridge, MA/London: MIT Press, 1998); T. Zhenghua and R. Wolfrum, *Implementing International Environmental Law in Germany and China* (The Hague/London: Kluwer, 2001). See also G. Handl, 'Controlling Implementation of and Compliance with International Environmental Commitments: The Rocky Road from Rio', 5 *Colorado Journal of International Environmental Law and Policy* 305 (1994); L. Boisson de Chazournes, 'La Mise en Œuvre du Droit International dans le Domaine de l'Environnement', 99 *Revue Générale de Droit International Public* 37 (1995); P. Sand, 'Institution Building to Assist Compliance with International Environmental Law: Perspectives', 56 *ZaōRV* 754 (1996).

²³ Examples include: 1969 Southeast Atlantic Convention, Art. X(1); 1972 London Convention, Art. VII(1), and 1996 Protocol, Art. 10(2); 1989 Basel Convention, Art. 4(4); 1991 Antarctic Environment Protocol, Art. 13.

²⁴ See e.g. 1988 CRAMRA, Art. 7(1). The 1998 Chemicals Convention identifies possible measures to include the establishment of national registers and databases, the encouragement of initiatives by industry, and the promotion of voluntary agreements (Art. 15(1)).

²⁵ Examples include: 1989 Basel Convention, Art. 5; 2001 Biosafety Protocol, Art. 19.

²⁶ 1982 UNCLOS, Arts. 213, 214, 216 and 222. ²⁷ Art. 235(2).

Treaty obligations that have not been implemented domestically will usually be difficult to enforce in national courts. EU law provides a notable exception, since it can create rights and obligations enforceable before national courts without being implemented provided that they fulfil certain conditions, such as being clear and unconditional.²⁸ The failure by EU members to adopt measures implementing EU environmental law has been the subject of enforcement measures taken at the ECJ.²⁹ In dealing with these cases, the ECJ has rejected different arguments by states seeking to justify domestic non-implementation.³⁰

NATIONAL COMPLIANCE

Once an obligation has been domestically implemented, the party must ensure that it is complied with by those within its jurisdiction and control. Numerous treaties expressly require parties to ensure such compliance,³¹ or to apply sanctions for failing to implement measures.³² Others specifically provide for the application of criminal penalties or for the ‘punishment’ of violations.³³ Ensuring national compliance is a matter for the public authorities of each state, although there is much evidence to suggest that domestic compliance with environmental obligations is inadequate and that compliance with international obligations needs to be enhanced.³⁴ National judges meeting shortly before the World Summit on Sustainable Development adopted the Johannesburg ‘Principles on the Role of Law and Sustainable Development’, which affirmed their adherence to the 1992 Rio Declaration which laid down the basic principles of sustainable development, affirmed that members of the judiciary, as well as those contributing to the judicial process at the national, regional and global levels, are ‘crucial partners for promoting compliance with, and the implementation and enforcement of, international and national environmental law’, and recognised that ‘the rapid evolution of multilateral environmental agreements, national constitutions and statutes concerning the protection of the environment increasingly require the courts to interpret and apply new legal instruments in keeping with the principles of sustainable development’.³⁵

²⁸ EU Treaty, Art. 288 (formerly Art. 249).

²⁹ R. Wagenbauer, ‘The European Community’s Policy on Implementation of Environmental Directives’, 14 *Fordham International Law Journal* 455 (1990); L. Krämer, ‘The Implementation of Community Environmental Directives Within Member States: Some Implications of Direct Effect Doctrine’, 3 *Journal of Environmental Law* 39 (1991).

³⁰ See e.g. Case 91/79, *Commission v. Italy* [1980] ECR 1099, rejecting Italy’s defences that the national legislation already contained provisions which to a large extent secured the realisation of the objects of the Directive, that the Directive was *ultra vires*, and that implementation was ‘thwarted by the vicissitudes which were a feature of the brief existence of the seventh legislature of the Italian Parliament, and particularly its premature end’ (*ibid.*, 1105).

³¹ Examples include: 1973 CITES, Art. VIII(1); 1992 OSPAR Convention, Arts. 22 and 23; 1996 Protocol to the London Convention, Art. 10; 1995 Fish Stocks Agreement, Art. 19.

³² Examples include: 1946 International Whaling Convention, Art. IX(1) and (3); 1969 Southeast Atlantic Convention, Art. X(1); OSPAR Convention, Arts. 22 and 23; 1989 Basel Convention, Art. 4(4).

³³ Examples include: 1989 Basel Convention, Art. 9(5); 1991 Bamako Convention, Art. 9; 2001 Biosafety Protocol, Art. 25(1); see also Resolution on the Role of Criminal Law in the Protection of Nature and the Environment, 8th UN Congress on the Prevention of Crime and the Treatment of Offenders, UN Doc. A/CONF/144/7, paras. 456–62 (1990).

³⁴ Agenda 21, Chapter 39, para. 39.3(d) and (e). In 2013, UNEP signed an MOU with the International Organization of Supreme Audit Institutions (INTOSAI – Working Group on Environmental Auditing, WGEA) to track progress towards the implementation of international environmental agreements covering climate change, hazardous waste, biodiversity, and other issues: www.unep.org/NEWSCENTRE/default.aspx?DocumentId=2726&ArticleId=9607#sthash.DbUxOGTL.dpuf

³⁵ 20 August 2002, available at www.opengovguide.com/standards-and-guidance/un-environment-programme-johannesburg-principles-on-the-role-of-law-and-sustainable-development. The Principles also express the judges’

Recognising that public authorities in many countries may not be able to ensure compliance, because of a lack of resources or commitment, and that individuals, groups and business can play a role in ensuring compliance, increasing numbers of states are encouraging private enforcement of national environmental obligations. These are sometimes referred to as 'citizen suits', allowing citizens (and businesses) to enforce national environmental obligations in the public interest. The importance of national remedies to challenge acts that damage the environment or violate environmental obligations has been recognised and is addressed internationally. Principle 10 of the Rio Declaration states that '[e]ffective access to judicial and administrative proceedings, including redress and remedy, shall be provided'. The 1993 Lugano Convention was the first international agreement to elaborate rules governing access to national courts to allow enforcement of environmental obligations in the public interest: Article 18 requires standing to be granted to environmental organisations to allow them to bring certain enforcement proceedings before national courts.³⁶ The 1998 Aarhus Convention goes a great deal further, giving concrete effect to the requirements of Principle 10 of the Rio Declaration on access to justice. Article 9(2) establishes an obligation on parties to ensure that members of the public which have a 'sufficient interest' or who claim an 'impairment of a right' have access to 'a review procedure before a court of law and/or another independent and impartial body established by law, to challenge the substantive and procedural legality of any decision, act or omission' which is subject to the Convention's Article 6. The Convention provides that 'sufficient interest' and 'impairment of a right' are to be determined in accordance with national law and 'consistently with the objective of giving the public concerned wide access to justice', and expressly provides that non-governmental organisations fulfilling certain conditions are deemed to have a 'sufficient interest' and rights capable of being impaired.³⁷ The Convention also provides that members of the public should be able to challenge acts and omissions by private persons and public authorities which contravene national provisions relating to the environment, and that all the procedures available should provide adequate and effective remedies (including injunctive relief) and be fair, equitable, timely and 'not prohibitively expensive'.³⁸ In April 2011, the Aarhus Compliance Committee issued findings and a recommendation that access to the ECJ did not meet the requirements of Article 9 of the Convention, with regard to access of individuals and NGOs, and that 'a new direction of the jurisprudence of the EU Courts should be established in order to ensure compliance with the Convention'.³⁹

The question of which state may or must ensure implementation is a difficult one where the environmental obligation relates to a shared natural resource or the global commons.⁴⁰ This can lead to conflicts between states over which has jurisdiction over a particular activity or violation.⁴¹ Some treaties allocate enforcement obligations to particular states, and in respect of marine

view that 'there is an urgent need to strengthen the capacity of judges, prosecutors, legislators and all persons who play a critical role at national level in the process of implementation, development and enforcement of environmental law, including multilateral environmental agreements (MEAs), especially through the judicial process'.

³⁶ The Lugano Convention is yet to enter into force.

³⁷ Art. 9(2). Art. 2(5) establishes the conditions for non-governmental organisations, requiring merely that they promote environmental protection and meet 'any requirements under national law'.

³⁸ Art. 9(3) and (4). By Art. 9(5), the parties are also to consider establishing appropriate assistance mechanisms to reduce barriers to access to justice.

³⁹ Findings and Recommendations of the Compliance Committee, with regard to Communication ACCC/C/2008/32, concerning compliance by the European Union, para. 97.

⁴⁰ Chapter 6, p. 205 (global commons), and p. 226 (shared natural resources).

⁴¹ On extraterritorial jurisdiction, see Chapter 6, pp. 205–6.

pollution the 1982 UNCLOS is notable for the detailed provisions on national enforcement responsibilities of flag states, port states or coastal states, depending on where a pollution incident occurred.⁴² No equivalent treaty rules apply for other matters, such as atmospheric pollution. However, under the 1979 Moon Treaty, the state of registration retains jurisdiction and control over personnel and equipment and is responsible for ensuring that 'national activities are carried out in conformity with the provisions' of the treaty.⁴³ And under the 1988 CRAMRA each party would have been required to ensure that recourse was available in its national courts for adjudicating liability claims under Article 8 of the Convention (and consistently with Article 7), including the adjudication of claims against any operator it had sponsored.⁴⁴

The UNCLOS rules are detailed and may provide a model for enforcement jurisdiction in other matters.⁴⁵ Generally, the flag state will be responsible for ensuring that vessels flying its flag or of its registry comply with applicable international pollution rules and standards, and with laws and regulations adopted in accordance with UNCLOS, and for the effective enforcement of such measures 'irrespective of where a violation occurs'.⁴⁶ Port states also have important enforcement functions. They may investigate and institute proceedings in respect of a vessel voluntarily within its port or at an offshore terminal for harmful discharges from that vessel outside the internal waters, territorial sea or exclusive economic zone (EEZ) in violation of international rules and standards.⁴⁷ And they must take measures to prevent vessels from sailing where they have ascertained that the vessel is in violation of applicable international rules and standards relating to seaworthiness that may threaten the marine environment.⁴⁸ A coastal state may institute proceedings against vessels within its port for violations of its laws and regulations adopted in accordance with UNCLOS or applicable international rules and standards for environmental violations occurring in its territorial sea or EEZ.⁴⁹ Where there are grounds for believing that there is a 'substantial discharge causing or threatening significant pollution of the marine environment', the coastal state also has the right to investigate and institute proceedings against vessels navigating in its territorial sea, to obtain information from vessels navigating in its EEZ, and to undertake inspections of vessels in its EEZ. The coastal state may also institute proceedings – with sanctions including detention – against vessels in its territorial sea or EEZ if there is

⁴² 1982 UNCLOS, Arts. 217–220.

⁴³ Arts. 12(1) and 14(1), see Chapter 7, pp. 291–2. Similar provisions apply under the 1967 Outer Space Treaty, Arts. VI and VIII, Chapter 7, p. 291.

⁴⁴ Art. 8(10); Chapter 16, pp. 767–8. The 1988 CRAMRA is not in force.

⁴⁵ The extent of enforcement obligations of coastal and flag states under UNCLOS with respect to illegal, unreported and unregulated (IUU) fishing were recently clarified by ILOS in its *Advisory Opinion on the Request Submitted by the Sub-Regional Fisheries Commission*, see Chapter 11, pp. 546–8.

⁴⁶ Art. 217(1). See also 1995 Fish Stocks Agreement, Art. 19.

⁴⁷ Art. 218(1). Proceedings in respect of violations taking place in the internal waters, the territorial sea or the EEZ of another state are, however, subject to certain limitations (see Art. 218(2)).

⁴⁸ Art. 219. See in this regard the various understandings and agreements on port state controls, discussed in Chapter 11, pp. 545–6. See generally E. Molenaar, *Coastal State Jurisdiction over Vessel-Source Pollution* (The Hague/London: Kluwer 1998); D. Anderson, 'Port States and Environmental Protection', in Alan Boyle and David Freestone (eds.), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford: Oxford University Press, 1999), 325; T. Keselj, 'Port State Jurisdiction in Respect of Pollution from Ships: The 1982 UNCLOS and the MOU', 30 *Ocean Development and International Law* 127 (1999); L. Johnson, *Coastal State Regulation of International Shipping* (Dobbs Ferry, NY: Oceana Publications, 2004); E. J. Molenaar, 'Port State Jurisdiction: Toward Comprehensive, Mandatory and Global Coverage', 38(1/2) *Ocean Development and International Law* 225 (2007); Z. Oya Özçayır, 'The Use of Port State Control in Maritime Industry and the Application of the Paris MOU', 14(2) *Ocean Coastal Law Journal* 230 (2009).

⁴⁹ Art. 220(1).

'clear, objective evidence' that a violation of applicable international rules and standards has occurred which results 'in a discharge causing major damage or threat of major damage to the coastline or related interests of the coastal state, or to any resources of its territorial sea or exclusive economic zone'.⁵⁰ UNCLOS does not prejudice the rights of states under international law to take and enforce measures to protect their coastlines or related interests from pollution or a threat of pollution. Such pollution may result from a maritime casualty, including collision or stranding, which may reasonably be expected to have major harmful consequences.⁵¹

With regard to the seabed and ocean floor and its subsoil, beyond the limits of national jurisdiction (known as the 'Area') and which constitute the 'common heritage of mankind',⁵² states parties must ensure that their activities, or the activities of their nationals or those effectively controlled by them or their nationals, are carried out in conformity with Part XI of UNCLOS. States parties are also subject to rules adopted by the International Seabed Authority concerning pollution and other hazards to the marine environment and the protection and conservation of natural resources.⁵³ In 2010, the Seabed Disputes Chamber of ITLOS handed down an advisory opinion that clarified the environmental obligations of states parties sponsoring activities in the Area, including duties of due diligence, environmental impact assessment and requirements to implement a precautionary approach.⁵⁴

The allocation of detailed enforcement powers to ensure compliance is not well developed in respect of many other environmental media involving shared resources. In the absence of specific treaty provisions, the applicable principles arise from general rules of international law concerning enforcement jurisdiction. Given the failure of many states, particularly developing states, to implement their international obligations by reason of lack of financial and other resources, an important development is the linkage that has been established by several treaties between the extent to which developing countries meet their treaty obligations, and the provision to them of financial resources. The 1990 amendments to the 1987 Montreal Protocol established a mechanism to 'meet all agreed incremental costs' of developing country parties 'to enable their compliance with the control measures of the Protocol'.⁵⁵ The 1992 Climate Change Convention went further by requiring developed country parties 'to meet the agreed full costs incurred by developing country parties in complying with their [reporting requirements and] agreed full incremental costs' needed by developing country parties for implementing their substantive obligations under the Convention.⁵⁶ The 2015 Paris Agreement also requires developed country parties to 'provide financial resources to assist developing country parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention'.⁵⁷ Similar provisions exist in other agreements, including the 1992 Biodiversity Convention, the 1994 Desertification Convention and the 2001 POPs Convention.

⁵⁰ Art. 220(1), (2), (3), (5) and (6).

⁵¹ Art. 221. See also ITLOS Advisory Opinion on Sub-Regional Fisheries Commission, Chapter 11, pp. 546–8.

⁵² Arts. 1(1) and 136. These provisions are not affected by the 1994 Agreement Implementing Part XI of UNCLOS.

⁵³ Arts. 139(1) and 145.

⁵⁴ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011), Chapter 11, pp. 498–9.

⁵⁵ Art. 10(1); Chapter 7, p. 280. ⁵⁶ Art. 4(3); Chapter 8, p. 305.

⁵⁷ Art. 9(1). Other parties, i.e. major developing countries are 'encouraged' to provide or continue to provide such support on a voluntary basis (Art. 9(2)). See also Art. 10(6) on support for technology development and transfer to developing countries.

Reporting

The third element of national compliance arises from the requirement that states must usually report national implementing measures. Most environmental agreements expressly require parties to report certain information to the international organisation designated by the agreement. The information to be reported typically includes: statistical information on production, imports and exports;⁵⁸ information on emissions or discharges;⁵⁹ information on the grant of permits or authorisations,⁶⁰ including the criteria therefor;⁶¹ information on implementation measures which have been adopted;⁶² details of decisions taken by national authorities;⁶³ scientific information;⁶⁴ and information on breaches or violations by persons under the jurisdiction or control of the party.⁶⁵

These reports may be required annually or biannually, or according to some other time frame.⁶⁶ They allow the international organisation and the other parties to assess the extent to which parties are implementing their obligations. It is clear, however, that many states fail to fulfil the basic reporting obligation, which suggests that more substantive obligations may also remain unimplemented. One study in the early 1990s considered six environmental treaties which required periodic reports, and found wide variations in compliance.⁶⁷ Some treaties revealed a strong record: all six parties to the International Whaling Convention required to submit information on their 1989 whale harvests did so,⁶⁸ and sixteen of the seventeen parties to the 1988 NO_x Protocol submitted their 1990 report on their emissions in 1987 or another year.⁶⁹ By October 1990, fifty-two of the then sixty-five parties to the 1987 Montreal Protocol had responded to the requirement to report information on their consumption of controlled substances in 1986, of which twenty-nine (representing 85 per cent of world consumption) submitted complete data.⁷⁰ At the other end of the scale, however, only nineteen of the sixty-four parties to the 1972 London Convention reported on the number and types of dumping permits they issued in 1987,⁷¹ and only thirteen of the fifty-seven parties to MARPOL 73/78 (representing only about 27 per cent of the world's gross shipping tonnage) submitted reports summarising violations and penalties they had imposed in 1989.⁷² Finally, just twenty-five of the 104 parties to the 1973 CITES submitted reports summarising their 1989 import and export certificates for listed endangered species.⁷³ These figures suggest the limited ability of many countries, particularly developing countries, to meet

⁵⁸ e.g. 1987 Montreal Protocol, Art. 7, as amended; 2001 POPs Convention, Art. 15.

⁵⁹ e.g. 1997 Kyoto Protocol, Art. 7(1); 2015 Paris Agreement, Art. 13(7).

⁶⁰ e.g. 1946 International Whaling Convention, Art. VIII(1). ⁶¹ e.g. 1996 LDC Protocol, Art. 9(4).

⁶² e.g. 1972 World Heritage Convention, Art. 29(1); 1989 Basel Convention, Art. 13(3)(c); 1992 Climate Change Convention, Art. 12(1); 2000 Biosafety Protocol, Art. 23; 2001 POPs Convention, Art. 15.

⁶³ e.g. 1989 Basel Convention, Art. 13(2)(c) and (d). ⁶⁴ e.g. 1946 International Whaling Convention, Art. VIII(3).

⁶⁵ *Ibid.*, Art. IX(4).

⁶⁶ See also 1992 Climate Change Convention, which required initial reports to be submitted within six months of entry into force by OECD countries, within three years of entry into force or upon the availability of financial resources by developing countries, and at their discretion by least developed countries (Art. 12(5); Chapter 8, p. 303).

⁶⁷ See United States General Accounting Office, 'International Environment: International Agreements Are Not Well Monitored', Report to Congressional Requesters, GAO/RCED-92-43 (1992).

⁶⁸ *Ibid.*, 26.

⁶⁹ *Ibid.*, 25. This high rate of reporting occurred even though the Protocol did not enter into force until February 1991.

⁷⁰ *Ibid.*, 24-5. Concern over lack of reporting led to the establishment in June 1990 of an Ad Hoc Group of Experts on the Reporting of Data (cited in United States General Accounting Office, 'International Environment'). Reasons found by the Group for incomplete reporting included lack of financial and technical resources, inability to use customs records to track imports and exports because they do not distinguish between different substances, and confidentiality of information.

⁷¹ *Ibid.*, 26. ⁷² *Ibid.*, 26-7. ⁷³ *Ibid.*, 27-8.

their reporting requirements. Subsequent practice has not indicated any real or recent improvements,⁷⁴ although steps are being taken to address the problem. This includes UNEP's engagement of international environmental auditors to better track progress on implementation under a range of critical agreements.⁷⁵

INTERNATIONAL ENFORCEMENT

Once evidence is available that a state, or a party to a treaty, has failed to implement an international environmental obligation, the question arises as to which persons having international legal personality may enforce that obligation internationally. In this context, 'enforcement' is understood as the right to take measures to ensure the fulfilment of international legal obligations or to obtain a ruling by an appropriate international court, tribunal or other body, including an international organisation, that obligations are not being fulfilled. International enforcement may occur at the instigation of one or more states, or an international organisation, or by non-state actors. In practice, international enforcement usually involves a combination of the three, each acting in different capacities. The extent to which any of these actors may invoke enforcement measures depends on the nature and legal basis of the alleged violation, the subject matter involved, and the international legal obligations at issue. This aspect of enforcement is essentially about the standing required to bring international claims.

Enforcement by States

As the principal subjects of international law, states have the primary role in enforcing rules of international environmental law. To be in a position to enforce a rule of international environmental law, a state must have standing, and to have standing it must be able to show that it is, in the words of the International Law Commission (ILC), an 'injured state'. Article 42 of the ILC's 2001 Articles on State Responsibility provides:

A State is entitled as an injured State to invoke the responsibility of another State if the obligation breached is owed to:

- (a) that State individually; or
- (b) a group of States including that State, or the international community as a whole, and the breach of the obligation:
 - (i) Specially affects that State; or
 - (ii) Is of such a character as radically to change the position of all the other States to which the obligation is owed with respect to the further performance of the obligation.⁷⁶

⁷⁴ D. McEvoy and J. Stranlund, 'Self-Enforcing International Environmental Agreements with Costly Monitoring for Compliance', 42(4) *Environmental and Resource Economics* 491 (2009).

⁷⁵ See further, UNEP Signs Agreement to Improve Monitoring of Hundreds of International Environmental Accords, www.unep.org/NEWSCENTRE/default.aspx?DocumentId=2726&ArticleId=9607#sthash.gqfcR0iP.dpuf

⁷⁶ ILC Articles on State Responsibility, Part 2, Art. 5(1), *Report of the ILC to the United Nations General Assembly*, UN Doc. A/56/10 (2001). See also the commentary in J. Crawford, *The ILC's Articles on State Responsibility* (2002), 255–60.

The rights concerning the first category include those arising from: a bilateral treaty; a multilateral treaty where particular performance is incumbent under the treaty as between one party and another; a unilateral commitment made by one state to another; or a rule of general international law which may give rise to individual obligations as between two states (for example, rules concerning riparian states and the non-navigational uses of international watercourses).⁷⁷ Rights arising under the second category are considered by the ILC to include a case of pollution of the high seas in breach of Article 194 of UNCLOS which may particularly impact on one or several states whose beaches may be polluted by toxic residues or whose coastal fisheries may be closed and hence considered to be specially affected,⁷⁸ or a nuclear-free zone treaty or any other treaty 'where each parties' performance is effectively conditioned upon and requires the performance of each of the others'.⁷⁹

The ILC Articles also envisage that a state other than an 'injured state' is entitled to invoke the responsibility of another state if:

- (a) The obligation breached is owed to a group of states including that state, and is established for the protection of a collective interest of the group; or
- (b) The obligation breached is owed to the international community as a whole.⁸⁰

In cases involving environmental damage, at least three situations are to be distinguished. The first is where a state permits activities which cause damage to its own environment; the second is where a state permits activities which cause damage to the environment of another state; and the third is where a state permits or causes damage to the environment in an area beyond national jurisdiction.⁸¹

Damage to a State's Own Environment

A number of international environmental agreements commit parties to protect environmental resources located exclusively within their territory, for example the conservation of non-migratory species⁸² or habitats⁸³ or watercourses⁸⁴ located within their territories. In these circumstances, other parties to the agreement could claim to be an injured state such as to allow them – at least in theory – to bring an international claim. In practice, this has not happened: it is only where the interference with the environmental resource crosses a national boundary that one or more states have felt compelled to act. Exceptionally, in the EU context the European Commission may institute proceedings for non-compliance with EU environmental rules even in the absence of transboundary consequences.⁸⁵

⁷⁷ See Commentaries on the Articles, 'Report of the International Law Commission on the Work of Its Fifty-Third Session', Official Records of the General Assembly, Fifty-Sixth Session, Supplement No. 10, UN Doc. A/56/10, Chapter IV.E.1, Art. 42 (p. 297).

⁷⁸ *Ibid.*, 299. ⁷⁹ *Ibid.*

⁸⁰ Art. 48. The remedy which a non-injured state may make is limited to cessation of the internationally wrongful act, assurances and guarantees of non-repetition, and the performance of the obligation of reparation in the interest of the injured state or of the beneficiaries of the obligation breached (see Art. 49(2)).

⁸¹ For a most helpful discussion (and table), see C. Stone, *The Gnat Is Older than Man: Global Environment and Human Agenda* (Princeton, NJ: Princeton University Press, 1993), 33ff.

⁸² Chapter 10, pp. 388ff. ⁸³ *Ibid.*, pp. 420–3. ⁸⁴ Chapter 9, pp. 360ff. ⁸⁵ See pp. 187–8.

Damage to the Environment of Another State

In situations involving damage to its environment, or consequential damage to its people or their property or other economic loss, a state will not find it difficult to claim that it is an 'injured state' and that it may bring an international claim. In the *Trail Smelter* case, the United States invoked its right not to be subjected to the consequences of transboundary air pollution from sulphur emissions in Canada and to bring a claim against Canada for having violated its rights. As a riparian state and a party to an international agreement with France, in the *Lac Lanoux* arbitration Spain relied upon prima facie rights to challenge France over proposed works which it alleged would violate its right to use the waters of the River Carol under certain conditions.⁸⁶ Similar considerations applied in respect of the *Gabčíkovo–Nagymaros* dispute submitted by Hungary and Slovakia to the ICJ for a determination of rights on the basis of a bilateral treaty between those two states and 'principles of general international law',⁸⁷ and in the *Pulp Mills* case brought by Uruguay against Argentina⁸⁸ and the Indus Waters Arbitration between India and Pakistan.⁸⁹ Australia, in the *Nuclear Tests* case, argued that French nuclear tests deposited radioactive fallout on Australian territory, which violated its sovereignty and impaired its independent right to determine the acts that should take place within its territory.⁹⁰ Ireland, in the *MOX* case, claimed that it was injured by transboundary movements of radioactive substances introduced into the Irish Sea by the United Kingdom in violation of its international commitments.⁹¹

Damage to the Environment in Areas Beyond National Jurisdiction

Not all cases will be as straightforward as the *Trail Smelter* case, however. In the *Nuclear Tests* cases, brought by Australia and New Zealand against France calling on the latter to halt its atmospheric nuclear testing in the South Pacific region, the claim raised a more complicated legal question than the allegation of a violation of sovereignty by the deposit of radioactive fallout in its territory: did Australia and New Zealand have the right to bring a claim to the ICJ on the basis of a violation of an obligation owed *erga omnes* to all members of the international community to be free from nuclear tests generally or in violation of the freedom of the high seas? Similar questions arose in the *Fur Seals* dispute.⁹² Both cases raised the issue of whether a state had standing to bring an environmental claim to prevent damage to an area beyond national jurisdiction, even if it had not itself suffered any material damage. This raises the possibility of bringing an action on the basis of obligations that are owed *erga omnes*, either on the basis of a treaty or on the basis of customary law. As a general matter, where one party to a treaty or agreement believes that another party is in violation of its obligations under that treaty or agreement, it will have the right, under the treaty or agreement, to seek to enforce the obligations of the party alleged to be in violation, even if it has not suffered material damage.⁹³ In most cases involving a violation of a treaty obligation, however, the applicant state is likely to have been induced into bringing a claim because it has suffered some form of material damage and not because it wishes to bring a claim to protect the interests of the international community.⁹⁴

⁸⁶ Chapter 9, pp. 341–2. ⁸⁷ *Ibid.*, pp. 345–51. ⁸⁸ *Ibid.*, pp. 351–5. ⁸⁹ *Ibid.*, pp. 355–9.

⁹⁰ Chapter 7, pp. 255–6. ⁹¹ Chapter 11, p. 473. ⁹² *Ibid.*, pp. 509–11.

⁹³ *The Wimbledon*, PCIJ (1923) Ser. A No. 1.

⁹⁴ See e.g. the proceedings brought by Australia and New Zealand against Japan in the *Southern Bluefin Tuna* cases, Chapter 11, pp. 528–9.

Such an example was Mexico's claim against the United States under the GATT over the US import ban on yellow-fin tuna caught by Mexican vessels on the high seas in violation of United States fisheries laws.⁹⁵ More recently, Australia's case, seeking to bring an end to 'scientific' whaling by Japan in the Antarctic, raised allegations of violations of treaty rights in areas beyond national jurisdiction.⁹⁶

For breaches of treaty obligations, the right of a state to enforce obligations will usually be settled by the terms of the treaty. Various human rights treaties permit any party to enforce the obligations of any other party by bringing a claim before the relevant treaty organs.⁹⁷ The EU Treaty allows a member state that considers that another member state has failed to fulfil an EU obligation, including an environmental obligation, to bring the matter before the ECJ.⁹⁸ Although this right has been relied upon on numerous occasions to threaten court proceedings, it appears to have resulted in a decision by the ECJ on just one occasion, when France successfully brought proceedings against the United Kingdom for unlawfully having enforced domestic legislation setting a minimum mesh size for prawn fisheries.⁹⁹ Under EU law, there is also no need to show that the claimant state has suffered damage: the mere violation of EU law is sufficient to allow standing. Given that the environment is, in many instances, a shared natural resource in the protection of which each member of the international community has an interest, compelling policy arguments can be raised to apply the rationale underlying the EU approach to the international legal protection of the environment generally.

The 1995 Fish Stocks Agreement introduced innovative and far-reaching provisions in its Part VI (on compliance and enforcement). Article 19 requires flag states to ensure compliance with subregional and regional conservation and management measures for straddling fish stocks and highly migratory fish stocks.¹⁰⁰ Article 20 establishes arrangements for international cooperation in enforcement. These include the requirement that, where a vessel is alleged to have been engaged in unauthorised fishing in an area under the jurisdiction of a coastal state, the flag state must, at the request of the coastal state concerned, 'immediately and fully' investigate the matter.¹⁰¹ Moreover, states parties which are members of a regional or subregional fisheries management organisation or participants in regional or subregional management arrangements may take action to deter vessels which have engaged in activities that undermine or violate the conservation measures established by the organisation or arrangement from fishing on the high seas until appropriate action is taken by the flag state.¹⁰² Article 21 addresses subregional and regional cooperation in enforcement. It provides that a state party which is a member of a regional or subregional fisheries management organisation or a participant in a regional or subregional management arrangement may board and inspect fishing vessels flying the flag of another party to the 1995 Agreement (whether or not that party is a member of the organisation or a participant in the arrangement) in any high seas area covered by an organisation or arrangement, for the purpose of

⁹⁵ Chapter 18, pp. 854–5. ⁹⁶ Chapter 11, pp. 536–8. ⁹⁷ e.g. ECHR, Art. 24.

⁹⁸ EU Treaty, Art. 259 (formerly Art. 227). ⁹⁹ Case 141/78, *France v. United Kingdom* [1979] ECR 2923.

¹⁰⁰ The flag state is required, inter alia, to enforce measures irrespective of where violations occur and ensure that, where serious violations have been established, the vessel involved does not engage in high seas fishing operations until all outstanding sanctions have been complied with.

¹⁰¹ 1995 Fish Stocks Agreement, Art. 20(7). ¹⁰² Art. 20(8).

ensuring compliance with conservation and management measures.¹⁰³ Article 21 goes on to provide detailed rules on the enforcement obligations of the flag state and the rights of the state party to the 1995 Agreement, particularly with regard to 'serious violations', including the requirement that actions taken other than by flag states must be proportionate to the seriousness of the violation.¹⁰⁴

The situation in general international law is less well developed, although there has been a move in the direction of third state enforcement under some environmental treaties and in international practice. New Zealand's 1995 application to the ICJ challenging France's resumption of underground nuclear tests was premised on the view that it would be unlawful for France to conduct such tests before it had carried out an environmental impact assessment as required (it was argued) by international law.¹⁰⁵ A failure by a party to the 1987 Montreal Protocol to fulfil its obligations under that treaty entitles any other party to the Protocol to enforce the obligation by invoking the non-compliance or dispute settlement mechanisms under the Protocol, without having to show that it has suffered material damage as a result of the alleged failure.¹⁰⁶ The 1989 Basel Convention similarly provides that any party 'which has reason to believe that another party is acting or has acted in breach of its obligations' under the Convention may inform the Secretariat and the party against whom the allegations are made.¹⁰⁷ Most other environmental treaties are less explicit, establishing dispute settlement mechanisms which will settle the question of enforcement rights in accordance with the provisions available under that treaty or related instruments. Some treaties specifically preclude their application to the global commons. The 1991 Espoo Convention, for example, precludes parties from requesting an environmental impact assessment or other measures in respect of harm to the global commons.¹⁰⁸

Whether a state has, in the absence of a specific treaty right, a general legal interest in the protection of the environment in areas beyond its national jurisdiction such as to allow it to exercise rights of legal protection on behalf of the international community as a whole (sometimes referred to as *actio popularis*) is a question which remains difficult to answer in the absence of state practice. This may happen in a situation where the activities of a state are alleged to be causing environmental damage to the global commons, such as the high seas, the seabed beyond national jurisdiction, outer space or perhaps the Antarctic, or to living resources found in or passing through those areas. In such cases, the question is which states, if any, have the right to enforce such international legal obligations as may exist to avoid causing environmental damage to an area of the global commons?

The matter has been considered in passing by the ICJ on two occasions, and by some of the ICJ judges in a third case. In the *South West Africa* (Preliminary Objections) case, the ICJ stated that, 'although a right of this kind [*actio popularis*] may be known to certain municipal systems of law, it is not known to international law as it stands at present; nor is the Court able to regard it as imported by the "general principles of law" referred to in Article 38, paragraph 1(c), of its Statute'.¹⁰⁹ However, a majority of judges in the *Barcelona Traction* case implicitly recognised

¹⁰³ Art. 21(1). ¹⁰⁴ Art. 21(16). 'Serious violations' are defined in Art. 21(11).

¹⁰⁵ *Request for an Examination of the Situation* (1995) ICJ Reports 288 at 291. ¹⁰⁶ See pp. Chapter 7, pp. 255–6.

¹⁰⁷ 1989 Basel Convention, Art. 19; the information is then to be submitted to the parties.

¹⁰⁸ Chapter 14, pp. 667–70. ¹⁰⁹ *South West Africa* case (1966) ICJ Reports 47.

the possibility of what might be considered to be an *actio popularis* under international law where an obligation exists *erga omnes*. The ICJ held that:

an essential distinction should be drawn between the obligations of a state towards the international community as a whole, and those arising *vis-à-vis* another state in the field of diplomatic protection. By their very nature the former are the concern of all states. In view of the importance of the rights involved, all states can be held to have a legal interest in their protection; they are obligations *erga omnes*.¹¹⁰

In the *Nuclear Tests* cases, four judges in their joint Dissenting Opinion (Judges Ortyeama, Dillard, Jimenez de Arechaga and Sir Humphrey Waldock) identified the conditions in which the *actio popularis* might be argued:

If the materials adduced by Australia were to convince the Court of the existence of a general rule of international law, prohibiting atmospheric nuclear tests, the Court would at the same time have to determine what is the precise character and content of that rule and, in particular, whether it confers a right on every state individually to prosecute a claim to secure respect for the rule. In short, the question of 'legal interest' cannot be separated from the substantive legal issue of the existence and scope of the alleged rule of customary international law. Although we recognise that the existence of a so-called *actio popularis* is a matter of controversy, the observations of this Court in the *Barcelona Traction, Light and Power Company Ltd* case suffice to show that the question is one that may be considered as capable of rational legal argument and a proper subject of litigation before this Court.¹¹¹

Despite the fact that the notion of *actio popularis* and rights and obligations *erga omnes* may be treated as distinct but related concepts, this dissenting opinion suggests that the two are closely linked. There has been little judicial consideration of what rights and obligations exist *erga omnes*, although the lists cited usually include obligations arising from the outlawing of acts of aggression and of genocide and relating to the protection of fundamental human rights.¹¹² Some support has been expressed by commentators for the view that obligations owed *erga omnes* might extend to environmental damage in areas beyond national jurisdiction,¹¹³ and support for this view might also be found in the ILC's previous classification of a 'massive pollution' of the atmosphere or of

¹¹⁰ *Barcelona Traction Company case (Belgium v. Spain)* (1970) ICJ Reports 4 at 32.

¹¹¹ *Nuclear Test case* (1974) ICJ Reports 253 at 369–70. See Judge De Castro: 'The Applicant has no legal title authorizing it to act as spokesman for the international community and ask the Court to condemn France's conduct' (*ibid.*, 390). See also Judge Gros (*ibid.*, 290) and Judge Petren (*ibid.*, 224).

¹¹² See R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (Harlow: Longman, 1992, 9th edn), vol. I, 5; M. Ragazzi, *The Concept of International Obligation Erga Omnes* (Oxford: Clarendon Press, 1997).

¹¹³ See Brownlie, calling for a liberal approach to the standing issue in such circumstances: I. Brownlie, 'A Survey of International Customary Rules of Environmental Protection', in L. Teclaff and A. Utton (eds.), *International Environmental Law* (Oxford: Oxford University Press, 1975), 5; J. Charney, 'Third State Remedies for Environmental Damage to the World's Common Spaces', in F. Francioni and T. Scovazzi, *International Responsibility for Environmental Harm* (London: Graham & Trotman, 1991), 149 at 157; K. Leigh, 'Liability for Damage to the Global Commons' (paper presented at an OECD Symposium on Liability for Nuclear Damage, Helsinki, September 1992), 25. On the suggestion that a coastal state is obliged to the world at large to prevent pollution of the territorial sea, see D. O'Connell, *The International Law of the Sea* (Oxford: Clarendon Press, 1984), vol. 2, 988–9.

the seas as an international crime.¹¹⁴ It has also been suggested that obligations *erga omnes* could be created by the actions of a limited number of states.¹¹⁵

There thus appears to be some support favouring the right of a state to bring an action in its capacity as a member of the international community to prevent significant damage to the environment from occurring in areas beyond its national jurisdiction. Although most discussions focus on damage occurring in the global commons, there may be equally compelling policy reasons for allowing the *actio popularis* concept to apply also in respect of damage occurring to the environment within another state's jurisdiction. To the extent, then, that a rational legal argument can be made in favour of the *actio popularis*, in respect of which international environmental obligations could it be relied upon? At this stage, it is most likely to be successfully invoked in a case involving very significant damage to the environment, perhaps even at the level of 'massive pollution' or harm. Likely candidates would probably include those environmental obligations that have been associated with the 'common concern' or 'common heritage' principles.¹¹⁶ They might therefore include the protection of the global environment from significant harm (Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration) and rights established by treaty which relate to, inter alia, protection of the high seas, the climate system, the ozone layer, biodiversity (including fisheries), plant genetic resources and, to a lesser extent, wetlands and cultural property, as well as in respect of environmental matters which are associated with human rights obligations.

On a more cautious note, it should be remembered that not all international organisations or their non-compliance bodies are likely to favour the *actio popularis* concept. The GATT Dispute Settlement Panel in the *Yellow-Fin Tuna* case specifically rejected the claim by the United States that it was entitled to take measures to protect dolphins on the high seas, although in that case the Panel applied GATT law and not public international law, and no evidence was presented by the United States that the dolphins were protected or endangered under international law.¹¹⁷ The decision of the WTO Appellate Body in the *Shrimp/Turtle* case, recognising that the United States had a legitimate interest in migratory sea turtles which were internationally endangered, marked a shift towards recognition of the *actio popularis* concept, although in that case it is important to recall that the species of sea turtle in question (if not the turtles actually harmed) were known to be located from time to time in United States waters.¹¹⁸ International law is in this respect still finding its centre of gravity, and states have not generally sought to assert a legal right to act on behalf of the whole international community in the protection of environmental issues on the basis of customary law or national law. Prior to the *Shrimp/Turtle* case, where states have sought to assert a legal right to act on behalf of the whole international community, as in the early *Fur Seal* arbitration and the *Yellow-Fin Tuna* case, they have been rebuffed on the ground that they were seeking to apply *national* laws extraterritorially. In both of the latter cases, the result might have been different if the complainant states had relied upon, and could prove the existence of, a rule of customary international law, as Australia and New Zealand sought to do in 1973 in the *Nuclear Tests* cases.

¹¹⁴ Draft Articles on State Responsibility, Part I, Arts. 1–35, Art. 19, in *Yearbook of the International Law Commission* (1980–II), Part 2, 30; see Chapter 16, pp. 769–70. See also 1998 Statute of the International Criminal Court, Art. 8(b)(iv).

¹¹⁵ See Jennings and Watts, *Oppenheim's International Law*, vol. 1, 5, citing the *Reparations for Injuries* case (1949) ICJ Reports 185, and the *Namibia* case (1971) ICJ Reports 56.

¹¹⁶ On 'common concern' and related concepts, see Chapter 6, p. 245. ¹¹⁷ Chapter 18, pp. 854–5.

¹¹⁸ *Ibid.*, pp. 859–65.

In many respects, the discussion of *actio popularis* at the international level is similar to that which takes place at the national level. In international affairs, the function of a state might be compared to that of an attorney general in national law. These national discussions suggest a further limitation on the likelihood of actions being brought by public authorities to enforce the environmental rights of the community as a whole. The views of one scholar on the clear limitations of an attorney general's ability to enforce rules to protect the environment on behalf of the community as a whole are equally applicable to international matters:

Their statutory powers are limited and sometimes unclear. As political creatures, they must exercise the discretion they have with an eye towards advancing and reconciling a broad variety of important social goals, from preserving morality to increasing their jurisdiction's tax base. The present state of our environment, and the history of cautious application and development of environmental protection laws long on the books, testifies that the burdens of an attorney general's broad responsibility have apparently not left much manpower for the protection of nature.¹¹⁹

The reluctance of states to enforce obligations towards the protection of the environment is, regrettably, supported by many examples. One leading example is the failure of any state to seek to enforce compliance by the former Soviet Union with its international legal obligations arising out of the consequences of the accident at the Chernobyl nuclear power plant in 1986.¹²⁰ This and other examples suggest that it is unlikely that the same states would seek to enforce obligations owed to the global commons, the violation of which may only lead to indirect or nominal harm to the state. This highlights the need for an increased enforcement role for international organisations, or other members of the international community, particularly where the mere attempt to enforce obligations may establish a precedent that could subsequently apply to the enforcing state.

Enforcement by International Organisations

While international organisations play an important legislative role in the development of international environmental law, their enforcement function is limited. International organisations are international legal persons that may seek to protect their own rights and enforce the obligations that others have towards them.¹²¹ Sovereign interests have, however, led states to be unwilling to transfer too much enforcement power to international organisations and their secretariats, although there are some indications that this reluctance is being overcome.

Early examples of limited enforcement roles granted to international organisations include: the right of the River Danube Mixed Commission to 'work out agreed measures' for the regulation of fishing in the Danube;¹²² the right of certain international fisheries institutions

¹¹⁹ C. Stone, 'Should Trees Have Standing? - Towards Legal Rights for Natural Objects', 45 *Southern California Law Review* 450 (1972).

¹²⁰ Chapter 16, pp. 737-8.

¹²¹ See *Reparations for Injuries* case (1949) ICJ Reports 174, where in an advisory opinion the ICJ determined that the UN had an 'undeniable right' to 'demand that its Members fulfil the obligations entered into by them in the interest of the good working of the Organization' and the capacity to claim adequate reparation for a breach of these obligations, and held that 'fifty states, representing the vast majority of the members of the international community, had the power, in conformity with international law, to bring into being an entity possessing objective international personality and not merely personality recognised by them alone, together with the capacity to bring international claims'.

¹²² 1958 Danube Fishing Convention, Art. 12(1).

to 'recommend' international enforcement measures or systems;¹²³ and the right of the International Commission for the Protection of the Rhine Against Pollution regularly to compare the draft national programmes of the parties to ensure that 'their aims and means coincide'.¹²⁴ Marginally more ambitious is the obligation of the CITES Secretariat, when it is satisfied that information it has received indicates that certain endangered species are being affected adversely by trade in specimens, to communicate that information to the relevant party or parties, which may then lead to the matter being reviewed by the next Conference of the Parties, which may make whatever recommendations it deems appropriate.¹²⁵

Developments for the protection of the marine environment and the Antarctic environment foresee an enhanced enforcement role for international organisations. The approach of the 1992 Oil Fund Convention was particularly ambitious, since it established and endowed the Fund with legal personality in the laws of each party and gave it rights and obligations, including being a party in legal and enforcement proceedings before the national courts of that party.¹²⁶ The 1982 UNCLOS also introduced innovative arrangements by endowing some of its institutions with a range of enforcement powers. Thus, the Council of the International Seabed Authority can: 'supervise and co-ordinate the implementation' of Part XI of UNCLOS and 'invite the attention of the Assembly to cases of non-compliance'; institute proceedings on behalf of the Authority before the Seabed Disputes Chamber in case of non-compliance; issue emergency orders 'to prevent serious harm to the marine environment arising out of activities in the Area'; and direct and supervise inspectors to ensure compliance.¹²⁷ A Legal and Technical Commission, one of the Council's organs, is entitled to make recommendations to the Council on the institution of proceedings and the measures to be taken following any decision by the Seabed Disputes Chamber.¹²⁸ In 2010, the Council requested the Seabed Disputes Chamber of ITLOS to render an advisory opinion on three questions relating to the responsibilities and obligations of states sponsoring persons and entities undertaking activities in the deep seabed area.¹²⁹ ITLOS issued an advisory opinion on the case on 1 February 2011.¹³⁰

Another example is the Antarctic Mineral Resources Commission, which would have been established under the 1988 CRAMRA, which could draw to the attention of all parties any activity that affected the implementation of CRAMRA or compliance by any party, as well as any activities by a non-party that affected implementation.¹³¹ The 1988 CRAMRA will not come into force, since it has been 'replaced' by the 1991 Antarctic Environment Protocol. The main environmental institution under this Protocol is the Committee for Environmental

¹²³ 1969 Southeast Atlantic Convention, Art. X(3); 1978 Northwest Atlantic Fisheries Convention, Art. XI(5);

1982 Convention for the Conservation of Salmon in the North Atlantic Ocean, Art. 4(2).

¹²⁴ 1976 Rhine Chemical Convention, Art. 6(3). ¹²⁵ 1973 CITES, Art. XIII.

¹²⁶ 1992 Oil Pollution Fund Convention, Art. 2(2).

¹²⁷ 1982 UNCLOS, Art. 162(2)(a), (u), (v), (w) and (z); the Authority is granted international legal personality and such legal capacity as may be necessary for the exercise of its functions and the fulfilment of its purposes (Art. 176).

¹²⁸ Art. 165(2)(i) and (j).

¹²⁹ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011).

¹³⁰ Chapter 11, pp. 498-9.

¹³¹ (Art. 7(7) and (8)). The Commission could also designate observers (Art. 12(1)(b)), and 'ensure the effective application' of the provisions in the Convention concerning notification, reporting of mineral prospecting, and keeping under review the conduct of Antarctic mineral resource activities with a view to safeguarding the protection of the Antarctic environment in the interest of all humankind (Art. 21 (1)(f) and (x)).

Protection.¹³² The Committee's enforcement role under the 1991 Protocol is more limited than that envisaged for the Commission under CRAMRA: the Committee provides advice and adopts recommendations on matters such as the effectiveness of measures taken, the application and implementation of environmental impact assessment procedures, and the state of the Antarctic environment.¹³³ The advice and recommendations are to be drawn upon fully by the Antarctic Treaty Consultative Meetings in adopting measures under the 1959 Antarctic Treaty for implementation of the Protocol.¹³⁴ The Committee is not, however, granted any formal enforcement powers.

The 1992 OSPAR Convention also goes some way towards establishing a limited role for the Commission it creates to ensure compliance. Under Article 23, entitled 'Compliance', the Commission has two functions. First, it must 'assess' compliance with the Convention by parties, and make any decisions and recommendations on the basis of the reports submitted by the parties.¹³⁵ Second, when appropriate, the Commission may:

decide upon and call for steps to bring about full compliance with the Convention, and decisions adopted thereunder, and promote the implementation of recommendations, including measures to assist a contracting party to carry out its obligations.¹³⁶

Although these provisions do not allow the Commission to take measures such as instituting court proceedings in national courts, or arbitration proceedings, they go beyond the provisions of many other international environmental agreements. Other arrangements endow particular organisations with enforcement or quasi-enforcement functions. In relation to weapons agreements, the UN Security Council may 'take action in accordance with the [UN] Charter' if the consultation and cooperation procedure established under the relevant treaties does not remove doubts concerning fulfilment of obligations under certain nuclear weapons treaties.¹³⁷ More generally, many of the institutions established by environmental treaties are required, as their primary task, to keep under review the relevant treaty and to promote its effective implementation.¹³⁸ This general function could be interpreted, over time and under the right conditions, to allow institutions to play an enforcement role.

No discussion of international enforcement powers would be complete without mention of the European Commission, which must, under Article 17(1) of the Treaty on European Union (formerly Article 211 of the EC Treaty), ensure that the provisions of the EU Treaties and the measures taken by the institutions (i.e. secondary legislation) are applied.¹³⁹ Article 258 (formerly Article 226) of the EU Treaty provides that:

¹³² Art. 11; see Chapter 13, pp. 639–43. ¹³³ Art. 12(1)(a), (d) and (j). ¹³⁴ Art. 10(1) and (2).

¹³⁵ Art. 23(a); see Chapter 11, pp. 472–3. ¹³⁶ Art. 23(b).

¹³⁷ 1971 Nuclear Weapons Treaty, Art. III(4); 1972 Biological and Toxic Weapons Convention, Art. VI.

¹³⁸ Examples include: 1979 Berne Convention, Art. 14(1); 1992 Climate Change Convention, Art. 7(2).

¹³⁹ Since the second edition of this book, the area of EU environmental law has expanded exponentially and is the subject of its own dedicated literature. For this reason, EU environmental law is only briefly treated in subsequent editions. For further discussion of EU environmental law, see the second edition, particularly ch. 15, and Jan H. Jans and Hans H. B. Vedder, *European Environmental Law* (Groningen, the Netherlands: Europa Law Publishing, 2012, 4th edn); Joanne Scott, *Environmental Protection: European Law and Governance* (Oxford: Oxford University Press, 2009); Maria Lee, *EU Environmental Law, Governance and Decision-Making* (London: Hart, 2014, 2nd edn). See also

If the Commission considers that a Member State has failed to fulfil an obligation under the Treaties, it shall deliver a reasoned opinion on the matter after giving the State concerned the opportunity to submit its observations.

If the member state concerned does not comply with the opinion within the period laid down by the Commission, the Commission may bring the matter before the ECJ.

Before the Commission can bring a member state before the ECJ, it must first present its case and evidence to the member state and request observations. The member state then has an opportunity to make observations, following which the Commission will deliver a 'reasoned opinion'. This allows a full airing of the differences between the Commission and the member state and often allows the matter to be resolved before the case is actually brought to the ECJ. In environmental matters, the Commission has frequently, and controversially, used its powers under Article 258. At any one time, the Commission is likely to have several dozen matters pending under Article 258, and has to date brought several hundred cases to the ECJ alleging violations of EU environmental laws.

The Commission can also apply to the ECJ for interim measures under Article 279 (formerly Article 243) of the EU Treaty – a form of interlocutory relief well established in EU jurisprudence and quite often employed, for example, in competition and antitrust cases. The Commission must show that it has a good, arguable case, that the need for relief is urgent, and that irreparable damage to the EU interest will be done if the order is not granted. The member state can defend itself by establishing that it will suffer irreparable harm if the order is made. The Commission does not have to give a cross-undertaking in damages in the event that it ultimately loses the case. In Case 57/89, *Commission v. Germany*, the ECJ considered the circumstances in which it would be prepared to prescribe necessary interim measures in environmental cases.¹⁴⁰ The case concerned the construction in Germany of a reservoir and related site; the Commission sought a declaration that the construction violated Article 4(1) of the 1979 Wild Birds Directive, and the adoption of interim measures to suspend the work until the ECJ had given its decision on the main application. The ECJ held that, for a measure of this type to be ordered, the application must state the circumstances giving rise to the urgency and the factual and legal grounds establishing a prima facie case for the interim measures.¹⁴¹ The ECJ rejected the application on the grounds that the Commission had failed to prove urgency: the application had been submitted after the project was well under way, and the interim measures had not been sought until a large part of the work had already been completed, and it could not be shown that 'it [was] precisely the next stage in the construction work which [would] cause serious harm to the protection of birds'.¹⁴²

Enforcement by Non-State Actors

According to traditional rules of public international law, non-state actors are not international legal persons except within the limited confines of international human rights law and its

Philippe Sands and Paolo Galizzi, *Documents in European Community Environmental Law* (Cambridge: Cambridge University Press, 2006).

¹⁴⁰ [1989] ECR 2849; affirmed in *R. v. Secretary of State for the Environment, ex parte Royal Society for the Protection of Birds* [1996] ECR I-3805.

¹⁴¹ *Ibid.*, 2854. ¹⁴² *Ibid.*, 2855.

associated fields. It is still difficult to find many textbooks on international law which make any reference to the role of environmental and other non-state actors in the international environmental legal process, although it is widely recognised that they have become in many areas, and particularly in the field of international environmental law, *de facto* international actors who are, in limited circumstances, endowed with *de jure* rights. In practice, non-state actors play a central role in the development and application of international environmental law.¹⁴³ Environmental organisations have also been involved in the international implementation and enforcement process although their primary role continues to be at the national level, through political means or by recourse to administrative or judicial procedures for enforcing national measures adopted by a state in implementing its international treaty and other obligations.

Enforcement in the National Courts

UNCED endorsed a stronger role for the non-governmental sector in enforcing national environmental laws and obligations before national courts and tribunals, as reflected in Agenda 21 and the Rio Declaration,¹⁴⁴ and since applied in the 1998 Aarhus Convention.¹⁴⁵ This occurred in the context of earlier treaties and agreements, which had recognised and encouraged their role, particularly where individuals were the victims of pollution or environmental damage in a transboundary context. These earlier efforts sought either to establish principles governing equal access to national courts by victims of transfrontier pollution, or to establish the jurisdiction of courts in the event of transboundary incidents.¹⁴⁶ The 1974 OECD Council Recommendation on Principles Concerning Transfrontier Pollution prepared the ground for the adoption of more detailed principles to ensure the legal protection of persons who suffer transfrontier pollution damage.¹⁴⁷ The 1976 OECD Council Recommendation on Equal Rights of Access in Relation to Transfrontier Pollution identified the constituent elements of a system of equal rights of access.¹⁴⁸ According to the Recommendation, these were a set of rights recognised by a country in favour of persons who are affected or likely to be affected in their personal or proprietary interests by transfrontier pollution originating in that country. They included rights relating to access to information and participation in hearings and enquiries, and 'recourse to and standing in administrative and judicial procedures' to prevent pollution, have it abated, or obtain compensation for the damage caused.¹⁴⁹ These general rights were further elaborated the following year by a more detailed OECD Council Recommendation for the Implementation of a Regime of Equal Right of Access and Non-Discrimination in Relation to Transfrontier Pollution.¹⁵⁰

The non-binding OECD instruments were supplemented by a range of treaty obligations that address equal access or the jurisdiction of courts over transboundary disputes. The 1974 Nordic Environmental Protection Convention allows any person who is affected or may be affected by a nuisance caused by 'environmentally harmful activities' in another contracting state to bring before the appropriate court or administrative authority of that state the question of the

¹⁴³ Chapter 3, pp. 89–95. ¹⁴⁴ Agenda 21, Chapter 27, para. 27.13; Rio Declaration, Principle 10. ¹⁴⁵ See p. 163.

¹⁴⁶ A distinct aspect is the situation in which a transnational corporation headquartered or based in one state is challenged for the environmental or health consequences of its acts in another state, even where no transboundary pollution (in the classical sense) has occurred. For a review of three such cases (*Ok Tedi*, *Thor Chemicals* and *Connelly*), see J. Cameron and R. Ramsey, 'Transnational Environmental Disputes', 1 *Asia Pacific Journal of Environmental Law* 5 (1996).

¹⁴⁷ OECD Doc. C(74)224. ¹⁴⁸ OECD Doc. C(76)55 (Final) (1976). ¹⁴⁹ Annex, paras. 1 and 2.

¹⁵⁰ OECD Doc. C(77)28 (Final) (1977).

permissibility of such activities, including the questions of compensation and measures to prevent damage.¹⁵¹ The 1974 Nordic Convention also provides for the appointment of a supervisory authority in each state 'to be entrusted with the task of safeguarding general environmental interests in so far as regards nuisances arising out of environmentally harmful activities in another contracting state', including the right to institute proceedings before or be heard by the courts or administrative authority of another contracting state.¹⁵² The supervisory authority of the state in which damage occurs is also required to facilitate on-site inspections to determine such damage.¹⁵³

An enforcement role for individuals is envisaged by several treaties establishing international rules on civil liability. In relation to the jurisdiction of national courts, these fall into two categories: those treaties requiring victims to bring proceedings before the courts of the state in which the transboundary pollution originated, and those allowing victims to choose either the court of the state in which the pollution originated or the courts of the state in which the damage was suffered. The nuclear liability conventions adopted in the 1960s fall into the former category.¹⁵⁴ They require victims of nuclear damage to make their claims before courts which may be several thousands of miles away from the area where the damage occurred, thus imposing an onerous burden. The oil pollution conventions adopted a decade or so later also provide support for the enforcement role of individuals, and are more accessible to individuals since they allow victims to claim before the courts of any contracting state in which an incident has caused pollution damage.¹⁵⁵

The second category of conventions ensuring a role for non-state enforcement establishes private international law rules allocating jurisdiction to national courts over a range of civil and commercial matters, including disputes arising out of the law of tort. These generally allow victims a choice of courts. Although they were not prepared with environmental pollution and disputes in mind, they can apply to transboundary environmental disputes. The 1968 Brussels Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters (1968 Brussels Convention), to which EU member states alone could become parties, had a number of purposes, including the free circulation of judgments throughout the EU, and had established jurisdiction rules for civil and commercial matters.¹⁵⁶ Under Article 5(3) of the Convention, jurisdiction in matters 'relating to tort, delict or quasi-delict' was conferred on the courts of the place 'where the harmful event occurred'. In *Handelskwekerij G. J. Bier v. Mines de Potasses d'Alsace*, the ECJ was asked to interpret 'where the harmful event occurred' in a case in which the defendant was alleged to have discharged over 10,000 tonnes of chloride every twenty-four hours into the Rhine River in France but the damage was suffered by horticultural businesses in the Netherlands.¹⁵⁷ The Dutch plaintiffs wished to bring proceedings in the Netherlands rather than in France. The ECJ held that Article 5(3) should be interpreted 'in such a way as to acknowledge that the plaintiff has an option to commence proceedings either at the place

¹⁵¹ Art. 3. ¹⁵² Art. 4. ¹⁵³ Art. 10.

¹⁵⁴ 1960 Paris Convention, Art. 13; 1963 Vienna Convention, Art. XI(1); see Chapter 16, pp. 772–9. A 1997 Protocol to the 1963 Vienna Convention extended the definition of nuclear damage to encompass environmental damage (Art. 2 (2)).

¹⁵⁵ 1969 CLC (as amended), Art. IX(1); 1992 Oil Pollution Fund Convention, as amended, Art. 7(1); Chapter 16, pp. 779–83.

¹⁵⁶ Brussels, 27 September 1968, in force 1 February 1973, OJ C189, 28 July 1990, 2, 77, Art. 1; 8 ILM 229 (1969).

¹⁵⁷ Case 21/76, *Handelskwekerij G. J. Bier v. Mines de Potasse d'Alsace* [1976] ECR 1735.

where the damage occurred or the place of the event giving rise to it'.¹⁵⁸ This allows victims of transboundary pollution in EU member states to choose the jurisdiction in which they wish to bring environmental cases that could be classified as tortious, delictual or quasi-delictual in nature. In 1988, the Brussels Convention was supplemented by the Lugano Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters, which applies similar rules to relations between EU countries and members of the European Free Trade Association.¹⁵⁹ In the EU, the two earlier conventions have largely been supplanted by Regulation 44/2001, which is directly applicable to all EU member states.¹⁶⁰

International Enforcement

At the international level, opportunities for non-state actors to play an enforcement role are limited, outside the field of human rights. Under some regional human rights treaties, individual victims, including non-governmental organisations, may bring complaints directly to an international body. Thus, the European Convention on Human Rights allows any person, non-governmental organisation or group of individuals claiming to be the victim of a violation of the rights in the Convention by one of the parties to bring a case to the European Court of Human Rights.¹⁶¹

Similar provisions exist in the Optional Protocol to the 1966 International Covenant on Civil and Political Rights for communications by individuals and groups of individuals to the Human Rights Committee, alleging breaches of the Covenant.¹⁶² The International Covenant on Economic, Social and Cultural Rights also grants individuals and groups such rights under a 2008 Optional Protocol.¹⁶³ Further, the Human Rights Council (formerly the UN Commission on Human Rights)¹⁶⁴ has powers to receive complaints from individuals and organisations about a consistent pattern of gross and reliably attested violations of human rights under a revised Complaints Procedure finalised in 2007. Complaints are reviewed by its subsidiary Working Group on Communications, which then makes recommendations to the Human Rights Council.¹⁶⁵ Outside of the human rights regime, non-governmental organisations and individuals have played an active role in supporting the enforcement role of the European Commission, usually by submitting complaints to that institution concerning the non-implementation by member states of their environmental obligations.

It is particularly in their capacity as watchdogs that environmental organisations play an important role in the development, application and enforcement of international

¹⁵⁸ *Ibid.*

¹⁵⁹ 16 September 1988, in force 1 January 1992, 28 ILM 620 (1989); Art. 5(3) is in the same terms as Art. 5(3) of the Brussels Convention. Liechtenstein, Norway, Iceland and Switzerland make up the EFTA states.

¹⁶⁰ Council Regulation (EC) No. 44/2001 on jurisdiction and enforcement of judgments in civil and commercial matters, OJ L12, 16 January 2001, 1.

¹⁶¹ Art. 34 of the ECHR (as amended by the Eleventh Protocol) (formerly 1950 ECHR, Art. 25(1)); all parties to the Convention have accepted the right of individual petition. See also the 1969 American Convention on Human Rights, Arts. 44 and 45; and the 1981 African Charter on Human and Peoples' Rights, Art. 55. On the relationship between these human rights instruments and the protection of the environment, see Chapter 17, pp. 819–27.

¹⁶² See Chapter 17, pp. 819–27.

¹⁶³ See generally *ibid.* The 2008 Optional Protocol entered into force on 5 May 2013 and presently has twenty-one states parties.

¹⁶⁴ *Ibid.*, pp. 819–20. The General Assembly created the Council by Res. 60/251 of 15 March 2006.

¹⁶⁵ *Ibid.* The complaints procedure was established by the Human Rights Council under the authority of A/HRC/Res/5/I of 18 June 2008, with provisions on the Working Group on Communications set out at [91]–[95].

environmental law. Environmental organisations have long been active in monitoring and seeking to enforce compliance by states of international environmental laws and standards. In this context, development, application and enforcement are so closely intertwined that it may be misleading to attempt to separate the tasks. In practice, environmental organisations seek to influence government positions at the national and international levels, to participate in international decision-making and lawmaking, and to enforce rules of international environmental law (at both the national and the international levels).¹⁶⁶ Examples of the ways in which these actors have sought to promote or give effect to international obligations include – at the international level – their role in bringing about requests from the WHO and the UN General Assembly for an advisory opinion on the legality of the use of nuclear weapons from the ICJ,¹⁶⁷ and informal assistance to states in the preparation (and even presentation) of a case.¹⁶⁸ At the national level, environmental organisations are increasingly active in bringing legal proceedings to enforce international environmental obligations.¹⁶⁹ In recent years, they have also gained a degree of access to some international proceedings from which they were previously excluded, in the sense that they are increasingly recognised as being able to file *amicus curiae* submissions.¹⁷⁰

INTERNATIONAL SETTLEMENT OF DISPUTES

Introduction

A range of international procedures and mechanisms are available to assist in the pacific settlement of environmental disputes. Article 33 of the UN Charter identifies the traditional mechanisms, including negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements, or other peaceful means of the parties' own choice.¹⁷¹

These techniques can be divided into two broad categories: diplomatic means according to which the parties retain control over the dispute in so far as they may accept or reject a proposed settlement (negotiation, consultation, mediation, conciliation); and legal means which result in legally binding decisions for the parties to the dispute (arbitration and judicial settlement). Recourse to regional arrangements and international organisations as mediators and conciliators provides something of a middle way: the legal consequences of any decision taken by the

¹⁶⁶ P. Sands, 'International Law, the Practitioner and "Non-State Actors"', in C. Wickremasinghe (ed.), *The International Lawyer as Practitioner* (London: BIICL, 2000), 103–24.

¹⁶⁷ Chapter 6, p. 202.

¹⁶⁸ e.g. the 1995 request to the ICJ by New Zealand to examine the resumption by France of nuclear testing ((1995) ICJ Reports 288) was brought by the government in part as a result of public and NGO pressure, including the preparation by at least one NGO of draft pleadings.

¹⁶⁹ See e.g. *R. v. Secretary of State for Trade and Industry, ex parte Greenpeace* [2000] 2 CMLR 94 (ruling that the 1992 Habitats Directive applies beyond UK territorial seas to areas over which the UK exercises sovereign rights).

¹⁷⁰ *United States – Import of Certain Shrimp and Shrimp Products*, AB-1998-4, 12 October 1998, para. 110; *Methanex v. United States of America*, Decision of the Tribunal on Petitions from Third Persons to Intervene as 'Amici Curiae', 15 January 2001, available at www.iisd.org/pdf/methanex_tribunal_first_amicus_decision.pdf. See also *European Communities – Measures Prohibiting the Importation and Marketing of Seal Products*, AB-2014-1 and AB-2014-2, 22 May 2014. *Amicus* briefs submitted by non-state actors are nonetheless only rarely relied on directly by deciding bodies, though parties may draw on information from briefs in their own arguments.

¹⁷¹ The 1958 High Seas Conservation Convention, Art. 9(1), specifically refers to Art. 33 of the UN Charter.

institution will depend on the treaty establishing the institution. Many of the earliest environmental treaties did not provide for any dispute settlement mechanisms whether of a diplomatic or legal nature, or of a voluntary or mandatory character.¹⁷² Initially, the trend was towards the use of informal and non-binding mechanisms, such as negotiation and consultation, supplemented by the use of more formal mechanisms, such as conciliation, arbitration and judicial settlement. More recently, there has been a move towards the development of new techniques to establish non-contentious mechanisms. Modern treaties provide parties with a range of options for settling disputes and encouraging implementation. The 1992 Climate Change Convention envisages no fewer than three mechanisms to assist in dispute resolution or non-implementation: a Subsidiary Body for Implementation, to provide assistance in implementation; a multilateral consultative process to address questions regarding implementation in a non-confrontational way; and the settlement of remaining disputes in more traditional ways by negotiation, submission to arbitration or the ICJ, or international conciliation.¹⁷³

Diplomatic Means of Dispute Settlement

Negotiation and Consultation

The technique of negotiation has been used to resolve a number of environmental disputes. In the *Fisheries Jurisdiction* case, the ICJ set forth the basic objectives underlying negotiation as an appropriate method for the resolution of a dispute. The ICJ held that the objective of negotiation should be:

the delimitation of the rights and interests of the parties, the preferential rights of the coastal state on the one hand and the rights of the applicant on the other, to balance and regulate equitably questions such as those of catch-limitation, share allocations and 'related restrictions concerning areas closed to fishing, number and type of vessels allowed and forms of control of the agreed provisions'.¹⁷⁴

The ICJ also set out conditions establishing that future negotiations should be conducted:

on the basis that each must in good faith pay reasonable regard to the legal rights of the other . . . thus bringing about an equitable apportionment of the fishing resources based on the facts of the particular situation, and having regard to the interests of other states which have established fishing rights in the area. It is not a matter of finding simply an equitable solution, but an equitable solution derived from the applicable law.¹⁷⁵

¹⁷² 1940 Western Hemisphere Convention; 1946 International Whaling Convention.

¹⁷³ 1992 Climate Change Convention, Arts. 10, 13 and 14. See also 1985 Vienna Convention, Art. 11; 1989 Basel Convention, Art. 20; 1992 Biodiversity Convention, Art. 27 and Annex II; 1997 Kyoto Protocol, Arts. 15, 16 and 19; 2013 Minamata Mercury Convention, Art. 25.

¹⁷⁴ (1974) ICJ Reports 3 at 31.

¹⁷⁵ *Ibid.*, 33. The ICJ also invoked its earlier statement in the *North Sea Continental Shelf* cases, that 'it is not a question of applying equity simply as a matter of abstract justice, but of applying a rule of law which itself requires the application of equitable principles' (*ibid.*, 47).

Environmental treaties refer, more or less as a matter of standard practice, to the need to ensure that parties resort to negotiation and other diplomatic channels to resolve their disputes before making use of other more formal methods.¹⁷⁶ Since negotiations of this type invariably take place behind closed doors, it is difficult to identify specific examples involving the successful resolution of claims and disputes by negotiation. One case involved the settlement between Canada and the Soviet Union concerning damage caused by the disintegration over Canada of Cosmos 954, a nuclear-powered satellite launched by the Soviet Union. The negotiated settlement was agreed in the context of the Soviet Union's consideration of the question of damage 'in strict accordance with the provisions' of the 1972 Space Liability Convention to which both countries were a party.¹⁷⁷

Consultation between states is also encouraged by environmental treaties as a technique to avert and resolve disputes and potential disputes between states. In the *Lac Lanoux* arbitration, the arbitral tribunal held that France had a duty to consult with Spain over certain projects likely to affect its interests, and that, in this context

the reality of the obligations thus undertaken is incontestable and sanctions can be applied in the event, for example, of an unjustified breaking off of the discussions, abnormal delays, disregard of the agreed procedures, systematic refusals to take into consideration adverse proposals or interests, and, more generally, in cases of violation of the rules of good faith.¹⁷⁸

Specific examples of environmental treaties requiring consultation in certain situations include: development plans which may affect the natural resources of another state;¹⁷⁹ measures to prevent the pollution of coastlines from oil pollution incidents on the high seas;¹⁸⁰ the authorisation of ocean dumping in emergency situations;¹⁸¹ pollution by certain substances from land-based sources;¹⁸² the permissibility of environmentally harmful activities;¹⁸³ and generally problems in applying a treaty or the need for and nature of remedial measures for breaches of obligation.¹⁸⁴ The 1979 LRTAP Convention requires early consultations to be held between parties 'actually affected by or exposed to a significant risk of long-range transboundary air pollution' and the parties in which a significant contribution to such pollution originates.¹⁸⁵ In the *Pulp Mills* case, the ICJ emphasised the importance of notification and other procedural obligations, and found that Uruguay had violated procedural obligations to inform, notify and negotiate under the 1975 River Uruguay Statute.¹⁸⁶

¹⁷⁶ Examples include: 1973 CITES, Art. XVIII; MARPOL 73/78, Art. 10; 1972 Space Liability Convention, Art. IX; 1974 Baltic Convention, Art. 18(1); 1979 LRTAP Convention, Art. 13; 1985 Vienna Convention, Art. 11(1) and (2); 1992 Climate Change Convention, Art. 14; 1992 Biodiversity Convention, Art. 27(1); 2013 Minamata Mercury Convention, Art. 25(1).

¹⁷⁷ By a protocol dated 2 April 1981, the Soviet Union agreed to pay, and Canada agreed to accept, C\$3 million in final settlement (see Chapter 16, p. 752).

¹⁷⁸ *Lac Lanoux* arbitration, 24 ILR 101 at 128 (1957). ¹⁷⁹ 1968 African Nature Convention, Art. XIV(3).

¹⁸⁰ 1969 CLC, Art. III(a); 1971 Oil Pollution Fund Convention, Art. 2, as amended by the 1992 Oil Pollution Fund Protocol.

¹⁸¹ 1996 London Protocol, Art. 8(2). ¹⁸² 1992 OSPAR Convention, Art. 3.

¹⁸³ 1974 Nordic Environmental Protection Convention, Art. 11.

¹⁸⁴ 1976 Pacific Fur Seals Convention, Art. XII; 1976 ENMOD Convention, Art. V(1) and Annex, providing for the establishing of a Consultative Committee of Experts.

¹⁸⁵ 1979 LRTAP Convention, Art. 5. ¹⁸⁶ Chapter 15, pp. 693–4.

Mediation, Conciliation, Fact-Finding and International Institutions

Where negotiations and consultations fail, a number of environmental treaties endorse mediation¹⁸⁷ and conciliation¹⁸⁸ (or the establishment of a committee of experts)¹⁸⁹ to resolve disputes, all of which involve the intervention of a third person. In the case of mediation, the third person is involved as an active participant in the interchange of proposals between the parties to a dispute, and may even offer informal proposals. There are few reported examples of mediation being relied upon to resolve environmental disputes. Of note, however, is the outcome of a mediation conducted under the auspices of the OAS, relating to a long-standing territorial dispute between Guatemala and Belize. In September 2002, the two facilitators appointed by the OAS put forward proposals, approved by the two states and Honduras, for a resolution of the dispute, including the establishment of an ecological park and a tri-state subregional fisheries commission.¹⁹⁰

In the case of conciliation, the third person assumes a more formal role and often investigates the details underlying the dispute and makes formal proposals for the resolution of the dispute. A recent instance of conciliation occurred in the context of the long-standing dispute between Pakistan and India over India's construction of the Baglihar hydroelectric dam on the Chenab River, which flows from Kashmir into Pakistan. In February 2007, an expert appointed by the World Bank delivered a final verdict acknowledging India's right to construct 'gated spillways' under the Indus Waters Treaty between the two countries.¹⁹¹ Other examples of conciliation include the role of the International Joint Commission established by Canada and the United States in the 1909 Boundary Waters Treaty,¹⁹² which fulfils a combination of quasi-judicial, investigative, recommendatory and coordinating functions. The now defunct European Commission on Human Rights also performed conciliation functions: once a petition had been referred to it, it was required to ascertain the facts, to place itself at the disposal of the parties concerned with a view to securing a friendly settlement of the matter on the basis of respect for human rights as defined in the Convention, and, where no such friendly settlement was reached, to draw up a report on the facts and state its opinion as to whether the facts found disclosed a breach of obligations under the Convention.¹⁹³ The Dispute Settlement Panels established under

¹⁸⁷ 1968 African Nature Convention, Art. XVIII (referring disputes to the Commission of Mediation, Conciliation and Arbitration of the OAU); 1976 European Convention for the Protection of Animals Kept for Farming Purposes, Art. 10; 1982 UNCLOS, Art. 284 and Annex V, Section 1; 1985 Vienna Convention, Art. 11(2).

¹⁸⁸ 1963 Vienna Convention, Optional Protocol Concerning the Compulsory Settlement of Disputes, Art. III; 1974 Paris LBS Convention, Art. 21 (conciliation by a Commission); 1985 Vienna Convention, Art. 11(4) and (5) (providing for the establishment of a conciliation commission); 1992 Biodiversity Convention, Art. 27(4) and Annex II, Part 2; 1992 Climate Change Convention, Art. 14(5)-(7); 1998 Chemicals Convention, Art. 20; 2001 POPs Convention, Art. 18. See also the Permanent Court of Arbitration, Optional Rules for Conciliation of Disputes Relating to Natural Resources and the Environment, 16 April 2002 (<http://pca-cpa.org/PDF/envconciliation.pdf>). On 11 April 2016, pursuant to Article 298 and Annex V of the United Nations Convention on the Law of the Sea, the Government of the Democratic Republic of Timor-Leste initiated compulsory conciliation proceedings against the Government of the Commonwealth of Australia, see further: <https://pcacases.com/web/view/132>

¹⁸⁹ 1949 FAO Mediterranean Fisheries Agreement, Art. XIII; 1951 International Plant Protection Convention, Art. IX; 1952 North Pacific Fisheries Convention, Protocol, paras. 4 and 5 (special committee of scientists).

¹⁹⁰ OAS, 'Proposals for Resolving Belize-Guatemala Territorial Dispute Win Broad International Support' (OAS Press Release, 1 October 2002) E-101/02, www.oas.org/en/media_center/press_release.asp?sCodigo=E-191/02

¹⁹¹ Raymond Laffitte, 'Baglihar Hydroelectric Plant: Expert Determination, Executive Summary' (2007), available at <http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-1171996340255/BagliharSummary.pdf>. Pakistan subsequently sought arbitration of the dispute by the PCA (see Chapter 9, pp. 355-9).

¹⁹² 1909 Boundary Waters Treaty, especially Arts. VIII and IX. ¹⁹³ 1950 ECHR, Arts. 28 and 31(1).

the GATT performed a similar function of conciliation.¹⁹⁴ Under Article XXIII(2) of the GATT, the Panels assisted the parties to a dispute to reach a solution and, failing that, made an objective assessment of the matter before them, including an objective assessment of the facts of the case and the applicability of and conformity with the GATT.¹⁹⁵

The 1997 Watercourses Convention provides that, where negotiation fails to lead to a successful outcome, the parties may jointly seek the good offices of, or request mediation or conciliation by, a third party, or make use, as appropriate, of any joint watercourse institutions that may have been established by them.¹⁹⁶ Where a dispute has not been settled within six months of a request for negotiations, any of the parties to the dispute may submit the dispute to impartial fact-finding in accordance with the Convention, unless the parties otherwise agree, and the fact-finding commission is to submit its report to the parties concerned setting forth its findings (with reasons) and such recommendations as it deems appropriate for an equitable resolution of the dispute, which the parties concerned must consider in good faith.¹⁹⁷ Under the 1985 Vienna Convention, the 1992 Biodiversity Convention, the 2001 Treaty on Plant Genetic Resources, and the 2013 Minamata Mercury Convention, conciliation will be used if the parties to the dispute have not accepted compulsory dispute settlement procedures by arbitration or the ICJ.¹⁹⁸ In 2002, a working group of the Permanent Court of Arbitration adopted optional rules for the conciliation of disputes relating to the environment and/or natural resources.¹⁹⁹ The PCA's Environmental Rules are referred to in treaties such as the 2003 Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters,²⁰⁰ and are also recommended by the International Emissions Trading Association in the Model Emissions Reduction Purchase Agreements it has developed for carbon trading.²⁰¹

The political organs of international institutions and regional agencies also play an important role in the settlement of disputes. Such organs may be granted an express mandate to consider disputes between two or more parties to the treaty.²⁰² Alternatively, they may attempt to resolve disputes between parties in the absence of a specific mandate to do so. Examples of the latter include the 1985 decision of the Conference of the Parties to CITES concerning the application of the Convention to endangered species acquired prior to the entry into force of the Convention,²⁰³ and the 1991 decision of the Executive Committee of the 1971 Oil Pollution Fund Convention to exclude claims by Italy against the Fund for non-quantifiable damage to the marine environment.²⁰⁴

Another example of this approach includes the 1974 Nordic Environmental Protection Convention, which provides for the establishment of a commission upon the demand of any party to give an opinion on the permissibility of environmentally harmful activities that entail

¹⁹⁴ See also dispute settlement under the NAFTA, Chapter 18, pp. 891–2.

¹⁹⁵ See BISD 26S/210, Understanding Regarding Notification, Consultation, Dispute Settlement and Surveillance, adopted 28 November 1979. On panel decisions relating to environmental matters, see Chapter 18, pp. 854–6.

¹⁹⁶ Art. 33(2). ¹⁹⁷ Art. 33(3).

¹⁹⁸ 1985 Vienna Convention, Art. 11; 1992 Biodiversity Convention, Art. 27; 2001 Treaty on Plant Genetic Resources, Art. 22; 2013 Minamata Mercury Convention, Art. 25.

¹⁹⁹ <https://pca-cpa.org/en/documents/pca-conventions-and-rules> ²⁰⁰ 2003 Civil Liability Protocol, Art. 14.

²⁰¹ See further, www.ieta.org

²⁰² See e.g. 1982 Jeddah Convention, Art. XXIV(2); 1988 Agreement on the Network of Aquaculture Centres in Asia and the Pacific, Art. 19(1).

²⁰³ See Chapter 10, p. 145. ²⁰⁴ See *The Haven* case, Chapter 16, pp. 785–7.

considerable nuisance to another party.²⁰⁵ The 1985 South Pacific Nuclear Free Zone Treaty establishes a control system which includes a complaints procedure involving the possible convening of a Consultative Committee to consider complaints and evidence of breach of obligations, with certain inspection powers, and the right to report fully to members of the South Pacific Forum (now the Pacific Islands Forum) and to give its decision as to whether a breach of obligation has occurred.²⁰⁶ Under the 1991 Espoo Convention, if the parties cannot agree on whether a proposed activity is likely to result in a 'significant adverse transboundary impact', any party involved in the disagreement may submit that question to an Inquiry Commission.²⁰⁷ The Inquiry Commission, comprising three members, will advise and prepare an opinion based on 'accepted scientific principles' on the likelihood of significant adverse transboundary impact, and may take all appropriate measures to carry out its functions.²⁰⁸ Finally, the procedure established under the Conference on Security and Co-operation in Europe provides an alternative means of achieving conciliation.²⁰⁹

Non-Compliance Procedures

One of the most significant developments in the field of international environmental law has been the emergence of non-compliance procedures under various multilateral environmental agreements, occupying a function between conciliation and traditional dispute settlement. Since the early 1990s, a significant number of treaties have established subsidiary bodies to deal with compliance and disputes over non-compliance. The first was the non-compliance procedure established under the 1987 Montreal Protocol, including the Implementation Committee established by the second Meeting of the Parties to the Protocol.²¹⁰ Under the non-compliance procedure, any party which has reservations about another party's implementation of its obligations under the Protocol may submit its concerns in writing to the secretariat, with corroborating information.²¹¹ The secretariat will then determine, with the assistance of the party alleged to be in violation, whether it is unable to comply with its obligations under the Protocol, and will transmit the original submission, its reply and other information to the Implementation Committee.²¹² The Implementation Committee has a membership of ten parties (originally five) elected by the Meeting of the Parties on the basis of equitable geographical distribution for a two-year period. Its functions are to receive, consider and report on submissions made by any party regarding another party's implementation of its obligations under the Protocol, and any information or observations forwarded by the secretariat in connection with the preparation of reports based on information submitted by the parties pursuant to their obligations under the Protocol.²¹³ The Committee may, at the invitation of the party concerned, undertake information gathering in the territory of that party, and will also maintain an exchange of information with the Executive Committee of the Multilateral Fund related to the provision of financial and technical cooperation to developing country parties.²¹⁴ The Committee is to try to secure 'an amicable resolution of the matter on the basis of respect for the

²⁰⁵ Arts. 11 and 12. ²⁰⁶ Art. 8 and Annex 4. ²⁰⁷ Art. 3(7). ²⁰⁸ Appendix IV. ²⁰⁹ See n. 21.

²¹⁰ See Decision II/5 (non-compliance), Report of the Second Meeting of the Parties to the Montreal Protocol on Substances That Deplete the Ozone Layer, UNEP/OzL.Pro.2/3, 29 June 1990; see now Decision IV/5 and Annexes IV and V, adopting the non-compliance procedure, Report of the Fourth Meeting of the Parties, UNEP/OzL.Pro.4/15, 25 November 1992, 32 ILM 874 (1993) (see Chapter 7, pp. 289–90).

²¹¹ Annex IV, para. 1. ²¹² Paras. 2–4. ²¹³ Para. 7(a) and (b). Decision IV/5 and Annex IV.

²¹⁴ Para. 7(d) and (e).

provisions of the Protocol' and report to the Meeting of the Parties, which may decide upon and call for steps to bring about full compliance with the Protocol.²¹⁵ The fourth Meeting of the Parties also adopted an indicative list of measures that might be taken by a Meeting of the Parties in respect of non-compliance, which comprise:

- appropriate assistance;
- issuing cautions; and
- suspension (in accordance with the applicable rules of international law concerning the suspension of the operation of a treaty) of specific rights and privileges under the Protocol.²¹⁶

The Committee's report must not contain confidential information and is to be made available to any person upon request.²¹⁷ Significantly, resort to the non-compliance procedure does not prejudice the dispute settlement provisions available under Article 11 of the 1985 Vienna Convention, which include negotiation, good offices, mediation, arbitration, submission to the ICJ and the establishment of a conciliation commission.²¹⁸

Following the developments under the Montreal Protocol, non-compliance procedures have been established under other multilateral environmental agreements, including the 1973 CITES Convention,²¹⁹ the 1989 Basel Convention,²²⁰ the 1991 VOC, 1994 Sulphur, 1998 POPs and Heavy Metals and 1999 Gothenburg Protocols to the LRTAP Convention,²²¹ the 1996 Protocol to the London Convention,²²² the 1998 Chemicals Convention,²²³ the 2000 Biosafety Protocol,²²⁴ the 2001 POPs Convention²²⁵ and the 2001 Treaty on Plant Genetic Resources.²²⁶ The two most significant arrangements operating currently, however, are reflected in the mechanisms established under the 1997 Kyoto Protocol and the 1998 Aarhus Convention.

Article 18 of the Kyoto Protocol called on the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol to approve, at its first session, 'appropriate and effective procedures and mechanisms to address cases of non-compliance', with the caveat that any procedures and mechanisms entailing binding consequences 'shall be adopted by means of an amendment to [the] Protocol'. In 2001, at the seventh Conference of the Parties, the parties adopted a decision on the compliance regime for the Kyoto Protocol, which is among the most comprehensive and rigorous established thus far.²²⁷ Rules of procedure were adopted in

²¹⁵ Paras. 8 and 9. ²¹⁶ Fourth Meeting of the Parties to the 1987 Montreal Protocol, note 210 above, Decision IV/5.

²¹⁷ Paras. 15 and 16.

²¹⁸ M. Koskeniemi, 'Breach of a Treaty or Non-Compliance? Reflections on Enforcement of the Montreal Protocol', 3 *Yearbook of International Environmental Law* 123 (1992).

²¹⁹ Conf. 14.3.

²²⁰ See COP Decision V/16, Mechanism for Promoting Implementation and Compliance of the Basel Convention, UNEP/CH.5/29, 10 December 1999.

²²¹ Decision 1997/2, LRTAP Convention Executive Body (www.unece.org/environmental-policy/conventions/envlrtapwelcome/convention-bodies/implementation-committee.html).

²²² Art. 11; Compliance Procedures and Mechanisms Pursuant to Article 11 of the 1996 Protocol to the London Convention 1972, adopted in 2007, LC 29/17, Annex 7, at www.imo.org/en/OurWork/Environment/LCLP/Compliance/Documents/Compliance%20Procedures.pdf

²²³ Art. 17; Decision RC-7/6 on procedures and mechanisms on compliance with the Rotterdam Convention (draft procedures).

²²⁴ Art. 34; BS-II-1, Rules of Procedure for Meetings of the Compliance Committee (2006).

²²⁵ Art. 17; Decision SC-7/26 on Procedures and mechanisms on compliance with the Stockholm Convention (draft procedures).

²²⁶ GB Resolution 2/2009, Annex. Doc. IT/GB-3/09/Report, Appendix A.2.

²²⁷ Decision 24/CP.7, FCCC/CP/2001/13/Add.3, 10 November 2001.

2006 and updated in 2008 and 2013.²²⁸ The compliance regime consists of a Compliance Committee made up of two branches: a Facilitative Branch and an Enforcement Branch. The Facilitative Branch provides advice and assistance to parties to promote compliance; the Enforcement Branch has the power to apply consequences to parties not meeting their commitments. Both branches are composed of ten members, including one representative from each of the five official UN regions, one from the small island developing states, and two each from Annex I and non-Annex I parties. Decisions of the Facilitative Branch may be taken by a three-quarters majority, but decisions of the Enforcement Branch require, in addition, a double majority of both Annex I and non-Annex I parties. The Compliance Committee also meets in a plenary composed of members of both branches, and a Bureau supports its work. Certain commitments fall under the remit of one or the other branch. The requirement, for example, of the flexibility mechanisms²²⁹ to be 'supplemental' to domestic action is under the purview of the Facilitative Branch, as is the commitment of Annex I parties to strive to minimise adverse impacts on developing countries. The Facilitative Branch also provides 'early warning' of cases where a party is in danger of not complying with its emissions targets. In response to problems, the Facilitative Branch can make recommendations and mobilise financial and technical resources to help parties comply. The Enforcement Branch, for its part, is responsible for determining whether an Annex I party is not complying with its emissions targets or reporting requirements, or has lost its eligibility to participate in the mechanisms. It can also decide whether to adjust a party's inventory or correct the compilation and accounting database, in the event of a dispute between a party and the expert review team. The remedies it may decide on are to be aimed at the 'restoration of compliance to ensure environmental integrity'. In the case of compliance with emissions targets, Annex I parties are granted one hundred days after the expert review of their final annual emissions inventory has finished to remedy any shortfall in compliance. If, at the end of this period, a party's emissions are still greater than its assigned amount, it must make up the difference in the second commitment period, plus a penalty of 30 per cent. It may also be barred from 'selling' under emissions trading and, within three months, it must develop a compliance action plan detailing the action it will take to ensure that its target is met in the next commitment period. Any party not complying with reporting requirements must develop a similar plan, and parties that are found not to meet the criteria for participating in the mechanisms will have their eligibility withdrawn. In all cases, the Enforcement Branch will make a public declaration that the party is in non-compliance and will also make public the consequences to be applied. A potential compliance problem can be raised either by an expert review team, or by a party about its own compliance, or by a party raising concerns about another party. After a preliminary examination, the matter will be considered in the relevant branch of the Compliance Committee. The Compliance Committee bases its deliberations on reports from expert review teams, the subsidiary bodies, parties and other official sources.²³⁰ Competent intergovernmental and non-governmental organisations

²²⁸ An informal consolidated version of the Committee's rules of procedure can be found at http://unfccc.int/files/kyoto_protocol/compliance/application/pdf/consolidated_rop_with_cmp_4tcmp9_amend_2014feb03.pdf

²²⁹ Chapter 8, pp. 310–12.

²³⁰ The Marrakesh Accords set out more detailed additional procedures with specific time frames for the Enforcement Branch, including the opportunity for a party facing the Compliance Committee to make formal written submissions and request a hearing in which it can present its views and call on expert testimony. In the case of non-compliance

may submit relevant factual and technical information to the relevant branch. The non-compliance mechanism under the Kyoto Protocol has been fully operational for close to a decade. The Enforcement Branch has issued decisions in respect of questions of implementation raised with respect to eight parties: Greece, Canada, Croatia, Romania, Ukraine, Lithuania, Slovakia and Bulgaria.²³¹

While the 2015 Paris Agreement – that will replace the 1997 Kyoto Protocol from 2020 onwards – also establishes a ‘mechanism to facilitate implementation of and promote compliance with’ the provisions of the Agreement, it appears that this mechanism will be considerably ‘softer’ than the Protocol’s non-compliance mechanism.²³² Article 15 of the 2015 Paris Agreement provides that the mechanism will consist of ‘a committee that shall be expert-based and facilitative in nature and function in a manner that is transparent, non-adversarial and non-punitive.’²³³

In October 2002, the parties to the Aarhus Convention established a Compliance Committee to review compliance by the parties with their obligations under the Convention.²³⁴ The Committee consists of nine members, elected from candidates nominated by parties and signatories and – innovatively – non-governmental organisations. The functions of the Committee are to consider any submission, referral or communication made to it, to prepare a report on compliance with or implementation of the provisions of the Convention, and to monitor, assess and facilitate the implementation of and compliance with reporting requirements. In consultation with the party concerned, the Committee may provide advice and facilitate assistance to individual parties regarding the implementation of the Convention. Subject to agreement with the party concerned, the Committee may also:

- make recommendations to the party concerned;
- request the party concerned to submit a strategy to the Committee regarding the achievement of compliance with the Convention and to report on the implementation of this strategy; and
- in cases of communications from the public, make recommendations to the party concerned on specific measures to address the matter raised by the member of the public.

The Meeting of the Parties may, upon consideration of a report and any recommendations of the Committee, decide upon appropriate measures to bring about full compliance with the Convention, including declarations of non-compliance, issuing cautions, suspending special rights and privileges under the Convention, and taking such other non-confrontational, non-judicial and consultative measures as may be appropriate. The Committee receives submissions from parties and referrals from the secretariat. Breaking new ground, the Committee may also receive communications from the public.²³⁵ Communications from the public are to be addressed in writing to the Committee through the secretariat and supported by corroborating information.

with emissions targets, the party can also lodge an appeal to the Conference of the Parties/Meeting of the Parties if that party believes it has been denied due process. 27/CMP.1.

²³¹ See UNFCCC, ‘Questions of Implementation’, at http://unfccc.int/kyoto_protocol/compliance/questions_of_implementation/items/5451.php. See also Meinhard Doelle, ‘Early Experience with the Kyoto Compliance System: Possible Lessons for MEA Compliance System Design’, 1(2) *Climate Law* 237 (2010).

²³² 2015 Paris Agreement, Art. 15(1). ²³³ *Ibid.*, Art. 15(2). ²³⁴ Decision I/7, 23 October 2002.

²³⁵ Parties may notify the depositary that they will not accept consideration of such communications, but only up to a maximum period of four years (para. 18).

In language familiar to human rights lawyers, the Committee is to consider any such communication unless it determines that the communication is anonymous, or an abuse of the right to make such communications, or manifestly unreasonable, or incompatible with the provisions of the decision establishing the Committee or with the Convention. Although there is no rule requiring exhaustion of local remedies, the Committee 'should at all relevant stages take into account any available domestic remedy unless the application of the remedy is unreasonably prolonged or obviously does not provide an effective and sufficient means of redress'.²³⁶ The Committee must bring any communications so submitted to the attention of the party alleged to be in non-compliance, and the party must within five months after any communication is brought to its attention by the Committee submit to the Committee a written statement clarifying the matter and describing any response that it may have made. The Committee may hold hearings, and in its over a decade of operation it has received approximately one hundred communications, the vast majority of which all were initiated by communications from NGOs or members of the public.²³⁷

Inspection Procedures of Multilateral Development Banks²³⁸

In September 1993, the World Bank became the first multilateral development bank to create an Inspection Panel to receive and review requests for inspection from a party that claimed to be affected by a World Bank project, including claims in respect of environmental harm.²³⁹ This innovation was followed by similar arrangements established at the Inter-American Development Bank (an Independent Consultation and Investigation Mechanism, first established in 1994),²⁴⁰ the Asian Development Bank (1995; now the Accountability Mechanism),²⁴¹ the International Finance Corporation and the Multilateral Investment Guarantee Agency (1998),²⁴² the European Bank for Reconstruction and Development (2004)²⁴³ and the African Development Bank (2006).²⁴⁴ These mechanisms provide substantive and independent review of the activities of these banks and have enhanced access to international remedies for non-state actors.

The World Bank Inspection Panel became operational in late 1994. An affected party (or, in limited cases, its representatives) may request an inspection if it can

²³⁶ Para. 21.

²³⁷ See UNECE, 'Compliance Committee in Numbers', at www.unece.org/env/pp/cc_infographics.html. A compilation of all findings by the Committee to date is available at www.unece.org/fileadmin/DAM/env/pp/compliance/Compilation_of_CC_findings.pdf (version 19 May 2015).

²³⁸ I. Shihata, *The World Bank Inspection Panel* (2000); S. Schlemmer-Schulte, 'The World Bank's Experience with Its Inspection Panel', 58 *ZaöRV* 353 (1998); L. Boisson de Chazournes, 'Le Panel d'Inspection de la Banque Mondiale: A Propos de la Complexification de l'Espace Public International', *Revue Générale de Droit International Public* 145 (2001); G. Afredsson and R. Ring (eds.), *The World Bank Inspection Panel* (The Hague/London: Martinus Nijhoff, 2001); World Bank, *Accountability at the World Bank: The Inspection Panel 15 Years Later* (2009); J. Zalberg, 'The World Bank Inspection Panel: A Tool for Ensuring the World Bank's Compliance with International Law' [2012] *Macquarie Journal of International and Comparative Environmental Law* 9.

²³⁹ Resolution of the Executive Directors No. IBRD 93-10 and IDA 93-6, 22 September 1993. The resolutions have been subject to Clarifications, adopted on 17 October 1996 and 20 April 1999, and updated operating procedures were adopted in April 2014. See <http://ewebapps.worldbank.org/apps/ip/Pages/Panel-Mandate.aspx>

²⁴⁰ See www.iadb.org/en/mici/home,1752.html

²⁴² See www.cao-ombudsman.org

²⁴³ The original Independent Recourse Mechanism was replaced in 2010 by a new Project Complaint Mechanism: www.ebrd.com/work-with-us/project-finance/project-complaint-mechanism.html

²⁴⁴ See www.afdb.org/en/about-us/organisational-structure/independent-review-mechanism-irm

demonstrate that its rights or interests have been or are likely to be directly affected by an action or omission of the Bank as a result of a failure of the Bank to follow its operational policies and procedures with respect to the design, appraisal and/or implementation of a project financed by the Bank . . . provided in all cases that such failure has had, or threatens to have, a material adverse effect.²⁴⁵

The Panel, which consists of three members, may make a recommendation to the Executive Directors as to whether a matter complained of should be investigated, having been provided with evidence from the management of the Bank as to its compliance with the Bank's policies and procedures.²⁴⁶ If the Executive Directors decide to investigate the matter, one or more members of the Panel (the Inspector(s)) will conduct an inspection and report to the Panel, which will then submit its report to the Executive Directors on whether the Bank has complied with its relevant policies and procedures.²⁴⁷ The World Bank Inspection Panel, and the review bodies established by other regional development banks, represent an important development in international law by creating within a multilateral development bank an administrative procedure to permit review of the institution's compliance with its internal law at the instigation of third parties other than employees. The well-developed practice of administrative tribunals addressing employment and contractual matters for Bank staff has been, in effect, extended into the fields of environmental and social review. By 2015, the Panel had received over one hundred requests, the largest number concerning compliance with the operational directive on environmental assessment (OD 4.01).²⁴⁸ Requests have also addressed the environmental policy for dam and reservoir projects (OD 4.00), environmental aspects of Bank work (OMS 2.36), indigenous peoples (OD 4.20), water resources and management (OP 4.07), wildlands (OPN 11.02) and natural habitats (OP/BP 4.04).²⁴⁹

NAFTA Commission on Environmental Cooperation

Citizen access to an independent fact-finding mechanism is available under the NAFTA: the secretariat of NAFTA's Commission on Environmental Cooperation may receive and consider submissions from any non-governmental organisation or person asserting that a party is 'failing to effectively enforce its environmental law', and may request a response from the party concerned if it determines that the submission so merits.²⁵⁰ The secretariat may be instructed

²⁴⁵ Resolution of the Executive Directors No. IBRD 93-10 and IDA 93-6, 22 September 1993, para. 12. 'Operational policies and procedures' consist of the Bank's Operational Policies, Bank Procedures and Operational Directives, and similar documents issued before these series were started. They do not include Guidelines and Best Practices or similar documents or statements (*ibid.*).

²⁴⁶ *Ibid.*, paras. 18 and 19.

²⁴⁷ *Ibid.*, paras. 20 and 22. The 1999 Clarifications provide that, if the Panel so recommends the Board will authorise an investigation without making a judgment on the merits of the claimant's request (para. 9).

²⁴⁸ See e.g. Request No. 19 (Lake Victoria Environmental Management Project) (in which the Panel found that Management was not in full compliance with OD 4.01, where Management had made no prior review of the environmental consequences of water disposal, and that environmental and other data necessary for subsequent assessments had not been obtained) and Request No. 22 (Chad-Cameroon Pipeline Projects) (failing to comply with the requirement to carry out a regional environmental assessment).

²⁴⁹ See Annual Report, 1 July 2014 to 30 June 2015, available at <http://ewebapps.worldbank.org/apps/ip/Pages/Annual-Report.aspx>

²⁵⁰ Agreement on Environmental Co-operation, Art. 14 (see Chapter 18, pp. 892-3). See generally www.cec.org; and Commission for Environmental Cooperation, *Bringing the Facts to Light: A Guide to Articles 14 and 15 of the NAEEC* (2000).

by the Council, by a two-thirds vote, to prepare a 'factual record' which may be made public by the Council.²⁵¹ Since 1996, the secretariat has received submissions in respect of eighty-seven matters, of which five are currently active. The secretariat has published factual records in respect of twenty-two matters, including: *Cozumel* (1997),²⁵² *BC Hydro* (2000),²⁵³ *Metales y Derivados* (2002),²⁵⁴ *Migratory Birds* (2003),²⁵⁵ *Aquanova* (2003),²⁵⁶ *BC Logging* (2003),²⁵⁷ *Oldman River II* (2003),²⁵⁸ *BC Mining* (2003),²⁵⁹ *Río Magdalena* (2003),²⁶⁰ *Molymex II* (2004),²⁶¹ *Tarahumara* (2006),²⁶² *Ontario Logging* (2007),²⁶³ *Ontario Logging II* (2007),²⁶⁴ *Pulp and Paper* (2007),²⁶⁵ *ALCA-Iztapalapa II* (2008),²⁶⁶ *Montreal Technoparc* (2008),²⁶⁷ and *Sumidero Canyon II* (2011).²⁶⁸

Legal Means of Dispute Settlement

Mediation and conciliation do not produce legally binding decisions. If the parties to a dispute seek such a result, they must opt for arbitration or recourse to an international court.²⁶⁹

Arbitration

International arbitration has been described as having 'for its object the settlement of disputes between states by judges of their own choice and on the basis of respect for the law. Recourse to arbitration implies an engagement to submit in good faith to the award.'²⁷⁰ States negotiating environmental treaties have often favoured the inclusion of specific provisions for the establishment of an arbitral tribunal, with the power to adopt binding and final decisions. Early examples providing for the establishment of a body to take binding decisions include the 'special commission' to be established at the request of any of the parties to disputes relating to high seas fishing and conservation,²⁷¹ and the detailed provisions on the establishment of an arbitral tribunal in the Annex to the 1969 Oil Pollution Intervention Convention.²⁷² Other environmental treaties include provisions, including annexes or protocols, for the submission of disputes to arbitration at the instigation of one party to a dispute²⁷³ or

²⁵¹ Art. 15. The procedure has been used by NGOs in all three of the NAFTA states parties to raise issues of non-compliance with environmental laws. Factual records have been produced in more than twenty cases but as yet no arbitral panel has been established to hear a complaint. Records of the submissions made, factual reports and responses of NAFTA parties are made available by the Commission for Environmental Cooperation on its website, www.cec.org/sem-submissions/sem

²⁵² *Cozumel*, SEM-96-001, 24 October 1997. ²⁵³ *BC Hydro*, SEM-97-001, 11 June 2000.

²⁵⁴ *Metales y Derivados*, SEM-98-007, 11 February 2002. ²⁵⁵ *Migratory Birds*, SEM-99-002, 24 April 2003.

²⁵⁶ *Aquanova*, SEM-98-006, 23 June 2003. ²⁵⁷ *BC Logging*, SEM-00-004, 11 August 2003.

²⁵⁸ *Oldman II*, SEM-97-006, 11 August 2003. ²⁵⁹ *BC Mining*, SEM-98-004, 12 August 2003.

²⁶⁰ *Río Magdalena*, SEM-97-002, 11 December 2003. ²⁶¹ *Molymex II*, SEM-00-005, 8 October 2004.

²⁶² *Tarahumara*, SEM-00-006, 9 January 2006. ²⁶³ *Ontario Logging*, SEM-02-001, 5 February 2007.

²⁶⁴ *Ontario Logging II*, SEM-04-006, 5 February 2007. ²⁶⁵ *Pulp and Paper*, SEM-02-003, 5 February 2007.

²⁶⁶ *ALCA-Iztapalapa II*, SEM-03-004, 2 June 2008. ²⁶⁷ *Montreal Technoparc*, SEM-03-005, 24 June 2008.

²⁶⁸ *Sumidero Canyon II*, SEM-11-002, 29 November 2011.

²⁶⁹ For an assessment of the composition of a court or tribunal on substantive environmental outcomes (in the US Court of Appeals for the District of Columbia), see R. Revesz, 'Environmental Regulation, Ideology and the DC Circuit', 83 *Virginia Law Review* 1717 (1997); and R. Revesz, 'Congressional Influence on Judicial Behaviour? An Empirical Examination of Challenges to Agency Action in the DC Circuit', 76 *New York University Law Review* 1100 (2001).

²⁷⁰ 1907 Hague Convention on the Pacific Settlement of International Disputes, Art. 37.

²⁷¹ 1958 High Seas Conservation Convention, Arts. 9 to 12. ²⁷² Art. VIII and Annex, Chapter II.

²⁷³ MARPOL 73/78, Art. 10 and Protocol 11; 1976 Rhine Chemical Pollution Convention, Art. 15 and Annex B; 1976 Convention on the Protection of the Rhine Against Pollution by Chlorides, Art. 13 and Annex B; 1979 Berne

both parties.²⁷⁴ Other treaties refer simply to the possibility of submitting disputes to arbitration without providing details on the establishment of such a body or its working arrangements.²⁷⁵ Certain environmental treaties provide for the submission of disputes to arbitration by mutual consent of the relevant parties²⁷⁶ or allow a party to declare, at the time of signature or ratification, that it is not bound by parts of the dispute settlement provisions, including submission to arbitration,²⁷⁷ or provide for a party to declare, at the time of signature or ratification, or at any time thereafter, its acceptance of compulsory recourse to arbitration and/or the ICJ.²⁷⁸

The *Pacific Fur Seal* arbitration (1893),²⁷⁹ the *Trail Smelter* case (1935/41)²⁸⁰ and the *Lac Lanoux* arbitration (1957)²⁸¹ reflect the historical importance played by arbitration in the development of international environmental law, in interstate cases. More recently, there is growing evidence that states view arbitration as an attractive means of resolving international disputes. Within the past few years, the 1982 UNCLOS Annex VII arbitration procedure has been invoked on numerous occasions: in 1998 by Australia and New Zealand against Japan, in relation to a dispute concerning the conservation of southern bluefin tuna;²⁸² in 2001 by Ireland against the United Kingdom, in the dispute concerning the authorisation of the MOX plant;²⁸³ in 2005 by Malaysia against Singapore in relation to land reclamation;²⁸⁴ and in 2010 by Mauritius against the United Kingdom on the legality of a marine protected area established around the Chagos Archipelago.²⁸⁵ Additionally, in 1999, the Netherlands and France submitted a dispute to arbitration with the Permanent Court of Arbitration (PCA) concerning the 1976 Rhine Chloride Convention and its 1991 Protocol;²⁸⁶ in 2001, Ireland initiated arbitration proceedings against the United Kingdom in relation to freedom of information under Article 9 of the 1992 OSPAR Convention;²⁸⁷ in 2003, Belgium and the Netherlands referred a dispute concerning the Iron Rhine railway line to another PCA arbitral tribunal,²⁸⁸ and in 2010 Pakistan referred a dispute to the PCA regarding its rights and those of India under the Indus River Treaty.²⁸⁹ Against that background, the Permanent Court of Arbitration (which has served as the registry in most of these disputes) has sponsored the adoption of arbitration rules specifically designed to address needs arising from the arbitration of disputes relating to the environment and natural resources.²⁹⁰ The growing role of arbitration is also reflected in the case law of arbitral tribunals

Convention, Art. 18; 1992 OSPAR Convention, Art. 32(2); 1994 Danube Convention, Art. 24; 1995 SADC Water Protocol, Art. 7; 1996 LDC Protocol, Art. 16; 1998 Rhine Convention, Art. 16; 2000 SADC Revised Water Protocol, Art. 7.

²⁷⁴ 1976 Barcelona Convention, Art. 22 and Annex A; 1980 CCAMLR, Art. XXV and Annex; 1983 Cartagena Convention, Art. 23 and Annex; 1986 Noumea Convention, Art. 26 and Annex.

²⁷⁵ 1974 Baltic Convention, Art. 18; 1985 Vienna Convention, Art. 11.

²⁷⁶ 1973 CITES, Art. XVIII (to the Permanent Court of Arbitration at The Hague); 1989 Basel Convention, Art. 20 and Annex VI.

²⁷⁷ 1986 Early Notification Convention, Art. 11; 1986 Assistance Convention, Art. 13.

²⁷⁸ 1992 Biodiversity Convention, Art. 27 and Annex II, Part 1; 1992 Climate Change Convention, Art. 14; 1992 Watercourses Convention, Art. 22; 1992 Industrial Accidents Convention, Art. 21; 2013 Minamata Mercury Convention, Art. 25.

²⁷⁹ Chapter 11, pp. 509–11. ²⁸⁰ Chapter 7, pp. 254–5. ²⁸¹ Chapter 9, pp. 341–2. ²⁸² Chapter 11, pp. 528–9.

²⁸³ Chapter 11, p. 473. ²⁸⁴ Chapter 6, p. 237. ²⁸⁵ Chapter 11, pp. 560–2. ²⁸⁶ Chapter 9, p. 369.

²⁸⁷ Chapter 15, p. 709. ²⁸⁸ Chapter 6, p. 227. ²⁸⁹ Chapter 9, pp. 355–9.

²⁹⁰ Adopted 19 June 2001; available at <https://pca-cpa.org/en/documents/pca-conventions-and-rules>. The Rules are available for the use of all parties who have agreed to use them; states, intergovernmental organisations, non-governmental organisations and private entities. The Rules provide for the *optional* use of a panel of arbitrators with experience and expertise in environmental or conservation of natural resources law nominated by the member states and the Secretary General, respectively (Art. 8(3)), and a panel of environmental scientists nominated by the member states and the Secretary General, respectively, who can provide expert scientific assistance to the parties and the

in investor/state disputes involving allegations of interference with foreign investments occasioned by municipal concerns to protect the environment.²⁹¹

International Courts

The settlement of international disputes may also be referred to an international court, which is a permanent tribunal competent to deliver a legally binding decision. In the environmental field, a number of international courts have assumed particular importance, namely the ICJ, the ITLOS, the WTO Appellate Body (and panels), the ECJ,²⁹² and the courts created by regional human rights treaties. In addition, several non-governmental efforts aim to establish 'international courts' to address international environmental issues. While not creating binding arrangements, these provide a useful way to bring environmental issues to the attention of the public.²⁹³ Notwithstanding certain calls for its creation, there is as yet no international environmental court, and none is likely to emerge in the foreseeable future.²⁹⁴

International Court of Justice

The ICJ, sometimes referred to as the 'World Court' or the 'Hague Court', is the UN's principal judicial organ. It was established as a successor (although not formally the legal successor) to the Permanent Court of International Justice (PCIJ) in 1945.²⁹⁵ Jurisdiction of the ICJ over a dispute depends on whether the Court has been invoked in a contentious case between two or more states, or asked to give an advisory opinion on a question of law at the request of states or certain international organisations.²⁹⁶

In July 1993, the ICJ established a seven-member Chamber for Environmental Matters. This decision followed previous consideration by the ICJ on the possible formation of such a chamber, and was taken in view of developments in the field of environmental law and the need to be

arbitral tribunal (Art. 27(5)). The Rules also make provision for the submission to the arbitral tribunal of a document agreed to by the parties, summarising and providing background to any scientific or technical issues which the parties may wish to raise in their memorials or at oral hearings (Art. 24(4)), and empower the arbitral tribunal to order any interim measures necessary to prevent serious harm to the environment, unless the parties agree otherwise (Art. 26). Recognising that time may be an important element in disputes concerning natural resources and the environment, the Rules provide for arbitration in a shorter period of time than under previous PCA Optional Rules or the UNCITRAL Rules. The PCA Rules were recommended for use by the Facilitators in the Belize/Guatemala matter (see n. 190 and the accompanying text), and are also recommended for use in emission reduction purchase agreements by the International Emissions Trading Association.

²⁹¹ See Chapter 19 (involving arbitration proceedings under ICSID (ICSID Additional Facility) and under UNCITRAL rules).

²⁹² The ECJ, albeit not an international court, is an example of dispute settlement at the supranational level. In addition, the ECJ in its case law has dealt with questions of the interpretation and application of international environmental law (see p. 187).

²⁹³ The International Water Tribunal, based in the Netherlands; the International Court for the Protection of the Environment (established by the International Juridical Organization for Environment and Development, Rome, in relation to the 1976 Barcelona Convention). See also A. Postiglione, 'A More Efficient International Law on the Environment and Setting Up an International Court for the Environment Within the United Nations', 20 *Environmental Law* 321 (1990).

²⁹⁴ See A. Postiglione, 'An International Court for the Environment?', 23 *Environmental Policy and Law* 73 (1993); A. Rest, 'An International Court for the Environment: The Role of the PCA', 4 *Asia Pacific Journal of Environmental Law* 107 (1999); P. Sands, 'International Environmental Litigation and Its Future', 32 *University of Richmond Law Review* 1619 (1999); E. Hey, *Reflections on an International Environmental Court* (The Hague/London: Kluwer, 2000).

²⁹⁵ See generally S. Rosenne, *The Law and Practice of the International Court* (Leiden: Sijthoff, 1965) and *Procedure in the International Court: A Commentary on the 1978 Rules of the ICJ* (The Hague/London: Martinus Nijhoff, 1983).

²⁹⁶ In relation to contentious cases, 'only states may be parties in cases before the Court' (UN Charter, Art. 34(1)).

prepared to the fullest possible extent to deal with any environmental case falling within its jurisdiction.²⁹⁷ The Chamber was periodically reconstituted, but it has not been constituted since 2006, in the absence of any case having been referred to it.

Contentious Cases

The contentious jurisdiction of the ICJ can arise in at least two ways. First, under Article 36(1) of its Statute, the ICJ has jurisdiction by agreement between the parties to the dispute, either by a special agreement whereby two or more states agree to refer a particular dispute and defined matter to the ICJ, or by a compromissory clause in a multilateral or bilateral treaty. The treaty could be a general treaty for the peaceful settlement of disputes, a treaty dealing with the general relations between the states, or a treaty regulating a specific topic, such as environmental protection. Many environmental treaties provide for possible recourse to the ICJ to settle disputes. Occasionally, they recognise its compulsory jurisdiction,²⁹⁸ but more usually the reference of a dispute to the ICJ requires the consent, in each case, of all parties to the dispute.²⁹⁹ Recent practice in environmental treaties allows parties at the time of signature, ratification or accession, or at any time thereafter, to accept compulsory dispute settlement by recourse to arbitration or to the ICJ.³⁰⁰ Few parties accept this option.

A second way in which contentious cases come before the ICJ is under Article 36(2) of its Statute (the 'Optional Clause'), under which parties to the Statute may declare that they recognise its compulsory jurisdiction, in relation to other states accepting the same obligation, in all legal disputes concerning: the interpretation of a treaty; any question of international law; the existence of any fact which, if established, would constitute a breach of an international obligation; and the nature or extent of the reparation to be made for the breach of an international obligation.³⁰¹ Acceptance of the jurisdiction of the ICJ under Article 36(2) may be made unconditionally, or on condition of reciprocity, or for a limited period of time.³⁰² Additionally, the practice of the ICJ has been to accept reservations or conditions to declarations made under the Optional Clause, as happened in the *Fisheries Jurisdiction* case (*Spain v. Canada*).³⁰³

Unlike its predecessor, the PCIJ, the ICJ has been presented with many opportunities to address international environmental disputes – raising matters concerning environment and natural resource conservation – and has given judgments that establish – or imply – important general principles. Relevant cases before the PCIJ included the *Diversion of the Waters of the River*

²⁹⁷ ICJ, Communiqué 93/20, 19 July 1993. The Chamber was established under Art. 26(1) of the Statute of the ICJ.

²⁹⁸ 1963 Vienna Convention, Optional Protocol Concerning the Compulsory Settlement of Disputes, Art. 1 (not in force); 1980 Convention on the Physical Protection of Nuclear Materials, Art. 17(2).

²⁹⁹ Examples include: 1959 Antarctic Treaty, Art. XI(2); 1974 Baltic Convention, Art. 18(2).

³⁰⁰ 1985 Vienna Convention, Art. 11(3); 1989 Basel Convention, Art. 20(3); 1992 Climate Change Convention, Art. 14(2); 1992 Biodiversity Convention, Art. 27(3); 1992 Industrial Accidents Convention, Art. 21; 1992 Watercourses Convention, Art. 22; 1998 Chemicals Convention, Art. 20(2); 2001 POPs Convention, Art. 18(2); 2013 Minamata Mercury Convention, Art. 25.

³⁰¹ Statute of the ICJ, Art. 36(2). As of March 2017, seventy-two states had made declarations recognising as compulsory the jurisdiction of the ICJ, as set out in the Optional Clause.

³⁰² Art. 36(3).

³⁰³ (1998) ICJ Reports 432, giving effect to (and finding that the dispute was covered by) Canada's reservation (made in its Declaration of 10 May 1994 under Art. 36(2)) excluding from the jurisdiction of the Court 'disputes arising out of or concerning conservation and management measures taken by Canada with respect to vessels fishing in the NAFO Regulatory Area ... and the enforcement of such measures'. On the dispute, see Chapter 11, pp. 527–8.

*Meuse*³⁰⁴ and the *Territorial Jurisdiction of the International Commission of the River Oder*.³⁰⁵ Early cases before the ICJ, which influenced the development of international environmental law, included: the *Corfu Channel* case, where the ICJ affirmed 'every state's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other states';³⁰⁶ the *Fisheries Jurisdiction* case, where the ICJ set forth basic principles governing consultations and other arrangements concerning the conservation of shared natural resources;³⁰⁷ and the *Nuclear Tests* cases.³⁰⁸ The ICJ has also had a number of cases before it which it considers as having important implications for international law 'on matters relating to the environment': the *Certain Phosphate Lands in Nauru* case, concerning the obligation, if any, of trustee states for, inter alia, the physical destruction of the island as a unit of self-determination accompanied by a failure to rehabilitate the land, as well as the nature and extent of obligations relating to permanent sovereignty over natural resources and entitlement to the costs of rehabilitation;³⁰⁹ the *Gabčíkovo–Nagymaros Project (Hungary/Slovakia)* case, addressing, inter alia, the use of international watercourses and international environmental law in relation to an agreement for the construction of two barrages which would have resulted in the diversion of the Danube River;³¹⁰ the *Request for an Examination of the Situation*, brought by New Zealand in relation to the resumption of underground nuclear tests by France;³¹¹ the *Fisheries Jurisdiction* case, where Spain challenged the enforcement of fisheries conservation measures taken by Canada in areas beyond its exclusive economic zone;³¹² the *Pulp Mills* case, concerning claims by Argentina that Uruguay had violated procedural and substantive obligations under the 1975 River Uruguay Statute;³¹³ *Whaling in the Antarctic (Australia v. Japan; New Zealand intervening)*, involving a challenge to the legality of Japanese practices of whaling for 'scientific research purposes',³¹⁴ and *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, concerning dredging of the San Juan River.³¹⁵ A further case which would have raised environmental issues – *Aerial Spraying*, brought by Ecuador against Colombia – was settled shortly before the opening of oral arguments.

Advisory Opinions

The UN Charter allows the General Assembly or the Security Council to request the ICJ to give an advisory opinion on any legal question,³¹⁶ and allows other organs of the UN and specialised agencies authorised by the General Assembly to request advisory opinions of the ICJ on legal questions arising within the scope of their activities.³¹⁷ Advisory opinions are not binding in law upon the requesting body, although in practice they are accepted and acted upon by that body. Although no legal question on an environmental issue has been the subject of a request for an advisory opinion, this route could provide a useful and non-contentious way of obtaining independent international legal advice on environmental matters.³¹⁸ In July 1996, the ICJ gave an advisory opinion on the legality of the use of nuclear weapons in the context of their effects

³⁰⁴ PCIJ Ser. A/B No. 70. ³⁰⁵ Chapter 9, p. 349. ³⁰⁶ Chapter 6, p. 207. ³⁰⁷ Chapter 11, pp. 512–13.

³⁰⁸ Chapter 7, pp. 255–6. ³⁰⁹ Chapter 12, pp. 606–7; the case was settled in September 1993.

³¹⁰ Chapter 9, pp. 345–51. ³¹¹ Chapter 7, pp. 255–6. ³¹² Chapter 11, pp. 527–8. ³¹³ Chapter 9, pp. 351–5.

³¹⁴ Chapter 11, pp. 536–8. ³¹⁵ Chapter 9, pp. 359–60. ³¹⁶ UN Charter, Art. 96(1).

³¹⁷ Art. 96(2). ECOSOC, the Trusteeship Council and fifteen of the specialised agencies have been authorised by the General Assembly, as have the IAEA, and the Interim Committee of the General Assembly. UNEP has not been so authorised by the General Assembly.

³¹⁸ On the aborted attempt by Palau to garner support for a General Assembly request for an advisory opinion from the Court on the issue of state responsibility for greenhouse gas emissions and climate change, see D. Kysar, *Climate Change and the International Court of Justice*, Yale Law School, Public Research Paper No. 315 (2013).

on human health and the environment, arguably one of the most significant of the ICJ's pronouncements on international environmental law.³¹⁹

Interim Measures of Protection

If it considers that the circumstances so require, the ICJ has the power to indicate interim measures of protection to preserve the rights of the parties to a dispute.³²⁰ The irreparability of serious environmental damage makes the availability of interim measures particularly important in cases concerning environmental protection. During the preliminary phase of the *Nuclear Tests* cases, the ICJ indicated interim measures of protection, asking the parties to ensure that no action should be taken which might aggravate or extend the dispute or prejudice the rights of another party, and calling on France to 'avoid nuclear tests causing the deposit of radioactive fall-out on Australian territory'.³²¹ Interim measures of protection were also indicated in the *Fisheries Jurisdiction* cases,³²² but were refused by the ICJ in the *Passage Through the Great Belt* case,³²³ and in ten cases brought by the Federal Republic of Yugoslavia to bring a halt to a bombing campaign, where it was argued, inter alia, that attacks on oil refineries and chemical plants were having 'serious environmental effects on cities, towns and villages in the Federal Republic of Yugoslavia'.³²⁴ In the *Pulp Mills* case, where the ICJ also rejected a request to order interim measures, it set out a test to be met in environmental cases: the Court ruled that Argentina had not established that 'the very decision by Uruguay to authorize the construction of the mills poses an imminent threat of irreparable damage to the aquatic environment of the River Uruguay', or persuaded the Court that 'the construction of the mills presents irreparable damage to the environment', or provided evidence that suggested that 'any pollution resulting from the commissioning of the mills would be of a character to cause irreparable damage to the River Uruguay'.³²⁵ This judgment appeared to set the bar very high in order to obtain interim measures in an environmental case, an approach that does not accord well with notions of precautionary action in circumstances of scientific uncertainty. More recently, in the case brought by Costa Rica against Nicaragua concerning activities in an area in which two wetlands of international importance are located, the ICJ was prepared to order interim measures of protection. This permitted Costa Rica to dispatch civilian personnel charged with the protection of the environment to the disputed territory, in so far as 'necessary to avoid irreparable prejudice being caused to the part of the wetland where that territory is situated', and subject to consultations with the secretariat of the Ramsar Convention and in consultation with Nicaragua.³²⁶

³¹⁹ Chapter 6, p. 202.

³²⁰ Statute of the ICJ, Art. 41. The ICJ has ruled that its provisional measures are legally binding: *Lagrand case (Germany v. United States)* (2001) ICJ Reports 466; 40 ILM 1069 (2001).

³²¹ Order for Interim Measures (1973) ICJ Reports 99; (*New Zealand v. France*), Order for Interim Measures (1973) ICJ Reports 135.

³²² *UK v. Iceland*, Order for Interim Measures (1972) ICJ Reports 12; *Federal Republic of Germany v. Iceland* (1972) ICJ Reports 30.

³²³ *Finland v. Denmark* (1991) ICJ Reports 9.

³²⁴ e.g. *Case Concerning the Legality of the Use of Force (Yugoslavia v. United Kingdom)* (1999) ICJ Reports 826, para. 3.

³²⁵ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Provisional Measures, Order of 13 July 2006 (2006) ICJ Reports 113 at 131 (paras. 73–6); see also Order of 23 January 2007 (2007) ICJ Reports 3.

³²⁶ *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, Provisional Measures, Order of 8 March 2011, para. 80.

UNCLOS and ITLOS³²⁷

Part XV of the 1982 UNCLOS addresses compulsory dispute settlement, allowing states at the time of signature, ratification or accession or at any time thereafter to designate any of the following dispute settlement procedures: the International Tribunal for the Law of the Sea (established in accordance with Annex VI to UNCLOS); the ICJ; an arbitral tribunal (constituted in accordance with Annex VII to UNCLOS); and a special arbitral tribunal (constituted in accordance with Annex VIII to UNCLOS).³²⁸ A state that does not designate one of these means is deemed to have designated arbitration in accordance with Annex VII, and where two or more states have designated different means the dispute will go to arbitration (unless the parties agree otherwise).³²⁹ Two recent cases that have raised significant environmental issues before Annex VII arbitration are the Chagos Marine Protected Area Arbitration (*Mauritius v. United Kingdom*)³³⁰ and the South China Seas Arbitration (*Philippines v. People's Republic of China*).³³¹

The compulsory dispute settlement procedure is limited to certain disputes under the Convention. The exercise by a coastal state of its sovereign rights or jurisdiction under UNCLOS is only subject to the compulsory procedures when it is alleged that a coastal state has violated certain UNCLOS provisions, including internationally lawful uses of the exclusive economic zone (EEZ) or specified international rules and standards for the protection and preservation of the marine environment which are applicable to that state and which are established under UNCLOS or by a competent international organisation or diplomatic conference.³³² Fisheries disputes are subject to the compulsory procedure, except for disputes over the sovereign right of a coastal state regarding the living resources of the EEZ (including the discretionary powers for determining allowable catch, harvesting capacity, the allocation of surpluses and the terms and conditions of its conservation and management laws and regulations).³³³ Such disputes may be submitted to the conciliation procedure if it is alleged that the coastal state has manifestly failed to comply with its obligations to maintain the living resources in the EEZ.³³⁴ Parties may also optionally declare that the compulsory procedures do not apply to disputes concerning boundary delimitations, military activities, and those in respect of which the Security Council is exercising its functions.³³⁵

Disputes relating to the exploration and exploitation of the international seabed and ocean floor (known as the 'Area') and its resources are subject to special, and rather complex, dispute settlement procedures, which will generally involve disputes going to the Seabed Disputes Chamber of ITLOS.³³⁶ The Seabed Disputes Chamber has jurisdiction over a wide range of disputes, including environmental disputes involving those engaged in activities in the Area

³²⁷ See generally A. O. Adede, *The System for Settlement of Disputes under the United Nations. Convention on the Law of the Sea* (1987); S. Rosenne, 'Establishing the International Tribunal for the Law of the Sea', 89 *American Journal of International Law* 806 (1995); T. Treves, 'The Jurisdiction of the International Tribunal for the Law of the Sea', 37 *Indian Journal of International Law* 396 (1997); G. Eiriksson, *The International Tribunal for the Law of the Sea* (2000); S. Rosenne, *Provisional Measures in International Law: The International Court of Justice and the International Tribunal for the Law of the Sea* (Oxford: Oxford University Press, 2005).

³²⁸ 1982 UNCLOS, Art. 287(1). ³²⁹ Art. 287(3) and (5).

³³⁰ Chagos Marine Protected Area Arbitration (*Mauritius v. United Kingdom*), PCA, Award of 18 March 2015, available at www.pcacases.com/web/view/11

³³¹ The South China Sea Arbitration (*Republic of Philippines v. People's Republic of China*), PCA, Award of 12 July 2016, available at www.pcacases.com/web/view/7

³³² Art. 297(1). ³³³ Art. 297(3)(a). ³³⁴ Art. 297(3)(b)(i). ³³⁵ Art. 298.

³³⁶ Arts. 186–191, and Annex VI, Arts. 35–40.

(states parties, the International Seabed Authority, state enterprises, legal or natural persons, and prospective contractors).³³⁷

The jurisdiction of ITLOS may also be invoked in certain circumstances where the parties to UNCLOS have not designated its use. Article 290(5) of the Convention provides that ITLOS may prescribe provisional measures pending the constitution of an arbitral tribunal to which a dispute is submitted. This provision has been invoked on several occasions: in 1998, Australia and New Zealand requested – and obtained – provisional measures from ITLOS in respect of fishing for southern bluefin tuna by Japanese vessels;³³⁸ in 2001, ITLOS prescribed a provisional measure requiring Ireland and the United Kingdom to cooperate pending the constitution of the Annex VI arbitral tribunal,³³⁹ and, in 2003, ITLOS prescribed provisional measures requiring cooperation between Malaysia and Singapore on the effects of a land reclamation project, and directed Singapore ‘not to conduct its land reclamation in ways that might cause irreparable prejudice to the rights of Malaysia or serious harm to the marine environment’.³⁴⁰ In the *M/V Louisa* case, where Saint Vincent and the Grenadines contended that there was ‘a definite threat to the environment by leaving [the] ship docked . . . for any significant additional time’, ITLOS declined to order provisional measures.³⁴¹

ITLOS also has jurisdiction pursuant to Article 292 of UNCLOS to order the ‘prompt’ release of vessels apprehended by a coastal state, and has given judgment on the merits in several cases involving vessels alleged to have been engaged in illegal fishing activities. In addressing these cases, ITLOS has sought to avoid expressing views on the underlying merits of the case, although in one case – between Russia and Australia involving the Volga – its judgment expressed understanding as to ‘international concerns about illegal, unregulated and unreported fishing’ and appreciation as to the objectives ‘behind the measures taken by states, including the states parties to CCAMLR, to deal with the problem’.³⁴²

Finally, ITLOS also has the possibility of issuing advisory opinions. In 2011, the Seabed Disputes Chamber rendered an opinion on *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, at the request of the International Seabed Authority. This advisory opinion addressed a number of important international environmental issues, including procedural and substantive obligations, and issues of liability.³⁴³ Moreover, by Article 138 of its Rules of Procedure, ITLOS has accorded to itself the ability to give an advisory opinion ‘on a legal question if an international agreement related to the purposes of the Convention specifically provides for the submission to the Tribunal of a request for such an opinion’. This route was utilised in the *Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission (SRFC)*, with the Tribunal ruling that the preconditions established by Article 138 had been met.³⁴⁴ The *SRFC Advisory Opinion*’s analysis of coastal and

³³⁷ Art. 187. Certain disputes, at the request of the relevant parties, may be submitted to the International Tribunal for the Law of the Sea, to an ad hoc chamber of the Seabed Disputes Chamber, or to commercial arbitration under UNCITRAL rules (*ibid.*, Art. 188).

³³⁸ Chapter 11, pp. 528–9. ³³⁹ Chapter 4, p. 114. ³⁴⁰ ITLOS, Order of 8 October 2003 (see Chapter 6, p. 237).

³⁴¹ *M/V Louisa* case (*Saint Vincent and the Grenadines v. Spain*), Order of 23 December 2010, paras. 73–6.

³⁴² Judgment of 22 December 2002, para. 68. See also the *Camouco* case (*Panama v. France*), Judgment, 7 February 2000; the *Monte Cafourco* case (*Seychelles v. France*), Judgment, 18 December 2000; and the *Grand Prince* case (*Belize v. France*), Judgment, 20 April 2001.

³⁴³ Chapter 11, pp. 498–9.

³⁴⁴ *Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission (SRFC Advisory Opinion)*, Advisory Opinion of 2 April 2015, ITLOS, available at www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion/C21_AdvOp_02.04.pdf

flag state duties to ensure sustainable fisheries management demonstrates the opportunities for ITLOS to render advisory opinions on environmental and other matters, beyond the limited possibility set out in UNCLOS in relation to the International Seabed Authority.

WTO Dispute Settlement Body

The 1994 WTO Agreement introduced as an Annex the 'Understanding on Rules and Procedures Governing the Settlement of Disputes' (DSU). The DSU is intended to prevent and resolve disputes arising under the WTO Agreement and related instruments. It replaced the arrangements that had emerged in the context of the GATT, principally a system of panels with the power to make non-binding recommendations. Under the prior system, the adoption of panel recommendations could be blocked by any single contracting party. One of the principal innovations of the WTO system was that panel decisions (as well as those of the standing Appellate Body) are adopted and become legally binding unless there is a consensus to the contrary. The WTO system therefore constitutes a system of compulsory third party adjudication with binding effects for its members. In this sense, it has potentially the most far-reaching and important jurisdiction of any of the global judicial bodies. Its past two decades of operation suggest that, despite having a focus on trade-related issues, it exercises a significant influence over the development of international environmental law.

The DSU established a dispute settlement system consisting of three bodies – the Dispute Settlement Body (DSB), ad hoc panels and the Appellate Body – all based in Geneva. The DSB is a political body, comprising representatives of all WTO members. It administers the dispute settlement process. The WTO system establishes a detailed 'road map' for intergovernmental dispute settlement, characterised by its speed and relative procedural clarity. In the event of a dispute between members of the WTO over their respective trade-related obligations, one party may request the other to enter into consultations and notify the DSB of this request. If the consultations fail, each party may propose that other traditional dispute settlement procedures (good offices, conciliation or mediation) be employed, with the possible assistance of the WTO Director General. If this fails to settle the dispute, the DSB may be asked to establish an ad hoc panel. Once established, a panel will conduct hearings and issue a non-binding report on the merits of the case. The recommendations of a panel become binding only after they have been adopted by the DSB (adoption is automatic, unless there is a consensus against it in the DSB). Unlike the old GATT system, the panel report may be appealed on legal grounds to a permanent seven-member Appellate Body. The appeal is heard before a three-judge division of the Appellate Body, which may uphold, modify or reverse the legal findings of the panel. The report of the Appellate Body is then adopted by the DSB and given binding force, unless the DSB unanimously decides otherwise.

The WTO dispute settlement system is governed principally by Articles III and IV of the WTO Agreement and the DSU. Working Procedures have been adopted for panel and Appellate Body proceedings,³⁴⁵ as have Rules of Conduct.³⁴⁶ The substantive law applied by the panels and the

³⁴⁵ Working Procedures for Appellate Review (consolidated), WTO Doc. WT/AB/WP/6, 16 August 2010. The Working Procedures have been amended six times since 1995.

³⁴⁶ Rules of Conduct for the Understanding on Rules and Procedures Governing the Settlement of Disputes, WTO Doc. WT/DSB/RdC/1, 11 December 1996.

Appellate Body is found in the 1994 WTO Agreement,³⁴⁷ and in the various multilateral and plurilateral side agreements to the GATT (including the Multilateral Agreement on Trade in Services, the General Agreement on Trade in Services, the Sanitary and Phytosanitary Measures Agreement, the Agreement on Technical Barriers to Trade, and the Agreement on Trade-Related Aspects of Intellectual Property Rights).³⁴⁸ In its first decision, the Appellate Body stated that these trade rules were ‘not to be read in clinical isolation from public international law’.³⁴⁹ It has subsequently referred to – and applied – principles and rules of international environmental law in the *Beef Hormones* case (precautionary principle), the *Shrimp/Turtle* case (including sustainable developments, fisheries conventions, the 1973 CITES, the 1992 Biodiversity Convention and the 1982 UNCLOS), and the *Asbestos* case.³⁵⁰ In other important cases, panel decisions have not been appealed, most notably in relation to 2006 panel decisions that found violations of the WTO’s Sanitary and Phytosanitary Measures Agreement in the *EU – Biotech* case on genetically modified organisms.³⁵¹ The WTO dispute settlement system has also been involved in a number of cases regarding renewable energy measures (which can contribute to climate change mitigation goals).³⁵²

European Court of Justice and Court of First Instance³⁵³

The European Court of Justice is the judicial institution of the European Union, and is required to ensure that, in the interpretation and application of the EU Treaties, ‘the law is observed’.³⁵⁴ Environmental cases brought before the ECJ may raise issues concerning the interpretation and application of international environmental law, in addition to relevant rules of EU law.³⁵⁵ Environmental cases reach the ECJ in a number of ways. The most frequent route is under Article 258 (formerly Article 226) of the EU Treaty,³⁵⁶ and since 1980 the European Commission has brought hundreds of cases to the ECJ alleging the failure of a member state to comply with its environmental obligations, most of which have been successful. In 2004, the ECJ ruled for the

³⁴⁷ General Agreement on Tariffs and Trade, Geneva, 30 October 1947, as revised on 15 April 1994, 33 ILM 28 (1994).

³⁴⁸ DSU, Appendix 1.

³⁴⁹ Case AB-1996-1, *US – Standards for Reformulated and Conventional Gasoline*, Report of the Appellate Body, 29 April 1996, at 18, WTO Doc. WT/DS2/9.

³⁵⁰ Chapter 18, pp. 859–65. ³⁵¹ *Ibid.*, pp. 879–82. ³⁵² *Ibid.*, p. 871.

³⁵³ Only a brief discussion of the role of the ECJ is undertaken here. For further information, see the second edition of this book, especially ch. 15. The enforcement of EU environmental law by the ECJ is the topic of a dedicated literature: see N. Brown and F. Jacobs, *The Court of Justice of the European Communities* (London: Sweet & Maxwell, 1989); H. G. Schermers and D. Waelbroeck, *Judicial Protection in the European Communities* (The Hague/London: Kluwer, 1992); K. P. E. Lasok, *The European Court of Justice – Practice and Procedure* (London: Butterworths, 1994, 2nd edn; 3rd edn forthcoming); D. Anderson, *References to the European Court* (1995); N. March Hunning, *The European Courts* (London: Cartermill, 1996); R. Macrory, ‘The Enforcement of Community Environmental Laws: Some Critical Issues’, 29 *Common Market Law Review* 347 (1992); P. Sands, ‘European Community Environmental Law: Legislation, the European Court of Justice and Common Interest Groups’, 53 *Modern Law Review* 685 (1990); P. Sands, ‘The European Court of Justice: An Environmental Tribunal?’, in H. Somsen (ed.), *Enforcing EC Environmental Law: The National Dimension* (London: Blackstone, 1996), 23–35; R. Macrory, *Regulation, Enforcement and Governance in Environmental Law* (London: Hart, 2010).

³⁵⁴ EU Treaty, Art. 19 (formerly Art. 220). The ECJ also has competence in relation to the interpretation and application of the 1950 ECSC and 1957 Euratom Treaties.

³⁵⁵ A full discussion of EU environmental law is not included in this edition, given the exponential growth of this body of law. See further, the second edition of this book, ch. 15.

³⁵⁶ Under Art. 259 (formerly Art. 227) of the EU Treaty, a member state that believes another member state has breached its obligations has a similar right to bring a matter before the ECJ.

first time that it had jurisdiction to entertain a claim brought by the European Commission alleging that a member state had violated a multilateral environmental agreement to which the EU and its member states were party: the ECJ ruled that France had failed to provide adequate protections to the Etang de Berre (an area of sea west of Marseilles) and had violated Articles 4 and 8 of the 1976 Barcelona Convention.³⁵⁷ This opened the door to a singularly important judgment, in which the Commission obtained a ruling that Ireland had, by instituting proceedings against the UK under UNCLOS in respect of the MOX plant, violated EU law. As the EU was party to UNCLOS, the ECJ ruled that the UNCLOS provisions on the prevention of marine pollution relied on by Ireland ‘clearly cover a significant part of the dispute relating to the MOX plant’ and ‘come within the scope of Community competence which the Community has elected to exercise by becoming a party to the Convention’. Accordingly, it held that the relevant UNCLOS provisions were ‘rules which form part of the Community legal order’, and that the dispute was thus one ‘concerning the interpretation or application of the EC Treaty, within the terms of Article 292 EC’. On this basis, the ECJ found that Ireland had violated its obligation to respect the ECJ’s exclusive competence.³⁵⁸ The case appears to lead to the conclusion that, henceforth, any claim by a third state against an EU member state alleging the breach of a multilateral environmental agreement to which the EU is also a party, and in respect of which it has competence, should be brought against the EU and not just the member state.

Under Article 263 (formerly Article 230) of the EU Treaty, the ECJ may review the legality of certain acts of the Council, Commission, Parliament and European Central Bank on the grounds of lack of competence, infringement of an essential procedural requirement, infringement of the EU Treaties or any rule relating to its application, or misuse of powers. Actions may be brought by a member state or by a Union institution, other than the institution complained against, or by any legal or natural person provided that the act concerned is a decision addressed to that person or is of direct or individual concern to it.³⁵⁹ Under this head, the ECJ has considered the legality of the treaty basis of EU environmental legislation,³⁶⁰ and received applications from environmental groups alleging violations by the European Commission of its legal obligations under the EU treaties.³⁶¹ The ECJ also has jurisdiction under Article 265 (formerly Article 232) under conditions similar to those governing Article 263, to challenge the failure of the Union institutions (in particular, the Council or Commission) to act in pursuance of its environmental obligations under the EU treaties. To date, no environmental case appears to have been brought under this provision.

Finally, the ECJ has also considered environmental questions on the basis of its jurisdiction under Article 267 (formerly Article 234), the ‘preliminary reference procedure’. Under this provision, the national courts of the EU member states may refer to the ECJ questions concerning the interpretation of the EU Treaties and the validity and interpretation of acts of the EU institutions, provided that a decision on the question is necessary to enable the national court

³⁵⁷ Case C-239/03, *Commission v. France* [2004] ECR I-9325.

³⁵⁸ Case C-459/03, *Commission v. Ireland* [2006] ECR I-4635, paras. 149–51.

³⁵⁹ EU Treaty, Art. 263 (formerly Art. 230).

³⁶⁰ Case C-300/89, *Commission v. Council* [1991] ECR I-2867 (judgment of 11 June 1991), declaring void Council Directive 89/428/EEC of 21 June 1989 for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry, on the ground that the Council adopted the Directive on the basis of the wrong Treaty provision; but see also Case C-155/91, *Commission v. Council* [1993] ECR I-939.

³⁶¹ See further ch. 15 of the second edition of this book.

to give a ruling on the question. Preliminary references from national courts to the ECJ are used when a dispute before the national courts raises a complex question of EU law or where the dispute turns on the EU law point and no appeal lies against the decision of the national court. The preliminary reference procedure has been used on many occasions in relation to environmental matters. A recent example was the *EU Aviation Emissions* case that arose from a referral by the English High Court to the ECJ for a preliminary ruling in relation to judicial review proceedings brought in the English courts by the Air Transport Association of America and certain US airlines against the UK Secretary of State for Energy and Climate Change over measures implementing the EU emissions trading scheme (ETS) in the UK. In its decision, the ECJ ruled that the extension of the ETS to cover greenhouse gas emissions from airline flights to and from the EU, including those originating in other countries, was valid as a matter of EU law.³⁶²

In 1988, the Council, acting under an amendment to the EC Treaty introduced by the 1986 Single European Act, established the Court of First Instance (CFI) with limited jurisdiction (over staff and competition cases and cases arising under the 1957 ECSC Treaty) and a right of appeal on points of law to the ECJ.³⁶³ In 1993, following amendments to the EC Treaty made by the 1992 EU Treaty, the competence of the CFI was extended and it may now hear environmental cases brought under, inter alia, Articles 263 and 265 of the EU Treaty, although it cannot hear and determine preliminary references requested under Article 267 (formerly Article 234). Appellate review on points of law for the extended jurisdiction remains with the ECJ.³⁶⁴

Human Rights Courts

The human rights courts established under regional human rights conventions³⁶⁵ may also have jurisdiction over environmental matters, although so far only the European Court of Human Rights appears to have addressed such issues in a sustained manner.³⁶⁶ From 1950 to 1998, the European Convention's machinery consisted of two organs, a Commission and a Court. Following the entry into force in November 1998 of the Eleventh Protocol to the Convention, the Commission was abolished and most of its functions transferred to the Court. As a result, claimants (whether states parties or individuals) now submit applications directly to the Court. The Court provides for traditional interstate dispute resolution, as well as the rights of recourse by victims of violations. By Article 33, any state party may bring to the Court a case against any other state party that is alleged to have breached the provisions of the Convention or its Protocols. In fact, very few interstate cases have been brought. Individuals, NGOs and groups of individuals, who claim to have been victims of a human rights violation,³⁶⁷ may also bring a

³⁶² See further Chapter 8, pp. 332–3, and Chapter 18, pp. 848ff.

³⁶³ EU Treaty, Art. 256 (formerly Art. 225); and Decision 88/591, OJ C251, 21 August 1988, 1.

³⁶⁴ Decision 93/350/Euratom, ECSC, EEC, OJ L144, 18 June 1993, 21.

³⁶⁵ The relevant courts are the European Court of Human Rights, the Inter-American Court of Human Rights and the African Court on Human and Peoples' Rights.

³⁶⁶ Chapter 17, pp. 820–3.

³⁶⁷ The European Court and previously the Commission of Human Rights have construed the term 'victim' narrowly. The Court has held that an individual cannot bring an *actio popularis* against a law *in abstracto*: *Klass v. Germany*, 2 EHRR 214 (1978). In addition, the Commission declined on several occasions to regard organisations, bringing complaints on behalf of their members, specific persons or the general public, as 'victims' under the Convention. See e.g. *Church of X v. UK*, App. No. 3798/68, 12 *Yearbook of the European Convention on Human Rights* 306 (1969).

case against the state party that has committed the alleged violation.³⁶⁸ In the past few years, the Court has given far-reaching judgments in relation to Article 2 (right to life), Article 8 (privacy) and Article 1 (property rights) of the First Protocol, subject areas that have also been addressed by the Inter-American Commission or Court of Human Rights, and that are likely to be addressed in the future by the African Court on Human and Peoples' Rights.

CONCLUSIONS

Whereas the 1972 Stockholm Conference did not really address the issue of compliance with international environmental obligations, the subject has grown in importance as such obligations have proliferated. Compliance was more central at UNCED. Principles 10 and 26 of the Rio Declaration called on states to provide, at the national level, 'effective access to judicial and administrative proceedings, including redress and remedy', and internationally to 'resolve all their environmental disputes peacefully and by appropriate means and in accordance with the Charter of the United Nations'. Agenda 21 recognised the limitations of existing arrangements, including the inadequate implementation by parties of their obligations, the need to involve international institutions and environmental organisations in the implementation process, and the gaps in dispute settlement mechanisms. It called upon parties to international agreements to 'consider procedures and mechanisms to promote and review their effective, full and prompt implementation', and on the international community more broadly to consider broadening and strengthening the capacity of mechanisms in the UN system to identify, avoid and settle international disputes in the field of sustainable development, taking into account existing bilateral and multilateral agreements for the settlement of such disputes.³⁶⁹ As this chapter shows, the increased attention given to compliance in the ensuing two decades has generated new approaches in the environmental field, to supplement those measures available under general international law. Of particular note in this regard is the proliferation of non-compliance procedures under a number of multilateral environmental treaties – although states have also shown renewed interest in recourse to more traditional forms of dispute settlement for environmental disputes, such as arbitration proceedings. By contrast, the decision by the ICJ to establish a Chamber for Environmental Matters has ultimately proved to be unsuccessful, and the Chamber has not been constituted since 2006. This reflects the reality that two states are usually not likely to agree that a dispute between them has an essentially environmental character: an environmental dispute for one state may be a dispute on the law of treaties or state responsibility for the other, which will not wish to make a concession by characterising a dispute as environmental. It is also for this reason that states are unlikely to agree, in the foreseeable future, on the establishment of an international environmental court.

Addressing compliance requires a comprehensive effort to develop rules and institutional arrangements at three levels: implementation, enforcement and dispute settlement. First, with regard to implementation, the provision of technical, financial and other assistance to states, particularly developing states, highlights the growing 'internationalisation' of the domestic implementation and legal process, and an awareness that international environmental law will

³⁶⁸ ECHR, Art. 34. ³⁶⁹ Agenda 21, Chapter 39, para. 39.3(h).

not achieve its objectives if it does not also take account of the need, and techniques available, for improving domestic implementation of international environmental obligations.

Second, with regard to enforcement, states have often been unwilling, for a variety of reasons, to bring international claims to enforce environmental rights and obligations. Within the past decade, however, it appears that this reluctance is being replaced by an increasing – if still only occasional – willingness by states to have resort to international adjudicatory mechanisms to enforce international environmental obligations, and important decisions have been handed down by the ICJ, ITLOS, Annex VII and other arbitral tribunals and the WTO Appellate Body. The role of states can also be reinforced by the supplementary role of international organisations and, to a lesser extent, non-state actors in the international enforcement process. Broadening the category of persons formally entitled to identify violations and to take measures to remedy them is a process that is under way and which should be further encouraged if states and other members of the international community are to be subjected to the sorts of pressure that will lead them to improve compliance with their obligations.

Third, as the disputes before various international courts have shown, the availability of a broad and growing range of mechanisms for dispute settlement, including the compulsory jurisdiction of certain regional and sectoral courts and other international bodies, suggests an important and growing role for independent, international adjudication. This does not mean that the existing arrangements may be said to be adequate: states increasingly have a choice of international fora before which to take an environmental dispute, and the factors they will take into account in electing to take a case before one international court or tribunal, rather than another, will include the likely costs, the speed of the proceedings, and the possible outcome, as well as the ability of a particular court or tribunal to engage with scientific and technical issues of some complexity. As the *Pulp Mills* judgment of the ICJ made clear, issues such as the treatment of expert evidence,³⁷⁰ and the possible use of court-appointed experts, give rise to a range of views.³⁷¹ There is thus considerable potential for states to engage in ‘forum-shopping’ in their selection of dispute settlement fora, a phenomenon which may contribute to fragmentation in the interpretation and application of principles of international environmental law.³⁷²

³⁷⁰ *Pulp Mills* case, Chapter 9, pp. 351–5, paras. 165–8, at para. 167 (‘Regarding those experts who appeared before it as counsel at the hearings, the Court would have found it more useful had they been presented by the Parties as expert witnesses under Articles 57 and 64 of the Rules of Court, instead of being included as counsel in their respective delegations. The Court indeed considers that those persons who provide evidence before the Court based on their scientific or technical knowledge and on their personal experience should testify before the Court as experts, witnesses or in some cases in both capacities, rather than counsel, so that they may be submitted to questioning by the other party as well as by the Court’). For a contrasting and arguably more sophisticated approach by the Court to issues of scientific evidence see *Whaling in the Antarctic*, Chapter 11, pp. 536–8.

³⁷¹ *Ibid.*, Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, paras. 2–25 (especially para. 14); also P. Sands, ‘Water and International Law: Science and Evidence in International Litigation’, 22 *Environmental Law and Management* 15 (2010).

³⁷² For a range of views on the issue of fragmentation in international law, see P.-M. Dupuy, ‘The Danger of Fragmentation or Unification of the International Legal System and the International Court of Justice’, 31 *New York University Journal of International Law and Politics* 791 (1999); Martti Koskeniemi and Päivi Leino, ‘Fragmentation of International Law? Postmodern Anxieties’, 15 *Leiden Journal of International Law* 552 (2002); Gerhard Hafner, ‘Pros and Cons Ensuing from Fragmentation of International Law’, 25 *Michigan Journal of International Law* 849 (2004); Pemmaraju Rao, ‘Multiple International Judicial Forums: A Reflection of the Growing Strength of International Law or Its Fragmentation?’, 25 *Michigan Journal of International Law* 929 (2004); Bruno Simma, ‘Fragmentation in a Positive Light’, 25 *Michigan Journal of International Law* 845 (2004). See also the ILC’s report on the issue: Martti Koskeniemi, ‘Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law’ (A/CN.4/L.682, International Law Commission, 2006).

The limitations inherent in international arrangements for ensuring compliance with international environmental obligations are well apparent, and developments in international law alone will not be sufficient to overcome the political, economic and social reasons lying behind non-compliance. Nevertheless, the law, processes and institutions can make a difference, and recent developments suggest that changes in the importance attached by the international community to compliance reflect the changing structure of the traditional international legal order. Important developments within the past two decades include the broadening and strengthening of non-compliance mechanisms under various multilateral environmental agreements, the Permanent Court of Arbitration's rules on arbitration of environmental disputes, the 'environmental justice' provisions of the 1998 Aarhus Convention, and a significant body of environmental jurisprudence at the ICJ, ITLOS and the WTO Appellate Body.

FURTHER READING

General resources on compliance with international environmental law:

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- M. Koskeniemi, 'Peaceful Settlement of Environmental Disputes', 60 *Nordic Journal of International Law* 73 (1991);
- P. Sands, 'Enforcing Environmental Security: The Challenges of Compliance with International Obligations', 15 *Journal of International Affairs* 46 (1993);
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- A. Kiss, 'Compliance with International and European Environmental Obligations', *Hague Yearbook of International Environmental Law* 45 (1996);
- W. Lang, 'Compliance Control in International Environmental Law', 56 *ZaöRV* 685 (1996);
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- T. Stephens, *International Courts and Environmental Protection* (Cambridge: Cambridge University Press, 2009);
- T. Treves, A. Tanzi, C. Pitea, C. Ragni and L. Pineschi (eds.), *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements* (Cambridge: Cambridge University Press, 2009);
- L. Paddock (ed.), *Compliance and Enforcement in Environmental Law* (Cheltenham, UK: Edward Elgar, 2011);
- A. Zahar, *International Climate Change Law and State Compliance* (New York: Routledge, 2014).

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- D. Shelton, 'The Participation of NGOs in International Judicial Proceedings', 88 *American Journal of International Law* 611 (1994);

- P. Sands, 'International Law, the Practitioner and "Non-State Actors"', in C. Wickremasinghe (ed.), *International Law as Practitioner* (London: BIICL, 2000), 103–24;
- P. Kalas, 'International Environmental Dispute Resolution and the Need for Access by Non-State Entities', 12 *Colorado Journal of International Environmental Law and Policy* 191 (2001).

Enforcement of international environmental law in national courts:

- 'Judicial Application of International Environmental Law', 7 *Review of European Community and International Environmental Law* 1–67 (1998) (special issue);
- M. Anderson and P. Galizzi, *International Environmental Law in National Courts* (London: British Institute of International and Comparative Law, 2002);
- A. Nollkaemper (ed.), *National Courts and the International Rule of Law* (Oxford: Oxford University Press, 2011).

Non-compliance procedures under international environmental treaties:

- M. Koskeniemi, 'Breach of Treaty or Non-Compliance: Reflections on the Enforcement of the Montreal Protocol', 3 *Yearbook of International Environmental Law* 123 (1992);
- J. Werksman, 'Compliance and Transition: Russia's Non-Compliance Tests the Ozone Regime', 36 *ZaōRV* 750 (1996);
- J. Werksman, 'Compliance and the Kyoto Protocol', 9 *Yearbook of International Environmental Law* 48 (1998);
- M. Fitzmaurice and C. Redgwell, 'Environmental Non-Compliance Procedures and International Law', 31 *Netherlands Yearbook of International Law* 35 (2000);
- P. Kalas and A. Herwig, 'Dispute Resolution under the Kyoto Protocol', 27 *Ecology Law Quarterly* 53 (2001);
- T. Crossen, 'Multilateral Environmental Agreements and the Compliance Continuum', 16 *Georgetown International Environmental Law Review* 473 (2004);
- E. Kirk, 'Noncompliance and the Development of Regimes Addressing Marine Pollution from Land-Based Activities', 39 *Ocean Development and International Law* 235 (2008);
- T. Treves, A. Tanzi, C. Pitea, C. Ragni and L. Pineschi (eds.), *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements* (Cambridge: Cambridge University Press, 2009);
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6

General Principles and Rules

CHAPTER OUTLINE

This chapter describes the foundational principles and rules of international environmental law that underpin specific sectoral regimes and implementation techniques. These principles and rules are 'general' in the sense that they potentially apply to all members of the international community and to all activities affecting the environment. The principles discussed in the chapter are:

1. Principle of sovereignty and responsibility: that states possess permanent sovereignty over their natural resources but have a responsibility to ensure that they do not cause transboundary damage;
2. Principle of preventive action: associated with a duty to avoid or minimise appreciable environmental harm to other states or global commons areas through the implementation of preventive measures;
3. Principle of cooperation: an extension of the general principle of good neighbourliness to environmental matters;
4. Principle of sustainable development: an overarching principle requiring states to reconcile economic development with protection of the environment;
5. Precautionary principle: that where there are threats of serious or irreversible damage, scientific uncertainty should not be used as a basis for postponing measures to prevent environmental degradation;
6. Polluter pays principle: dictating that the costs of pollution should be borne by polluters; and
7. Principle of common but differentiated responsibilities: an equitable principle placing a special responsibility on developed countries in the pursuit of sustainable development.

The chapter explains the nature and content of each principle, drawing on relevant instruments and judicial decisions.

INTRODUCTION

This chapter describes the general principles and rules of international environmental law as reflected in treaties, binding acts of international organisations, state practice, judicial decisions and soft law commitments.¹ The existence and applicability of 'principles of international

¹ See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), ch. 8; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), chs. 22–30; D. Bodansky, *The Art and Craft of International Environmental Law* (Cambridge, MA/London: Harvard University Press, 2010), chs. 5 and 9;

environmental law' were confirmed by the arbitral tribunal in the *Iron Rhine* case.² Such principles are general in the sense that they are potentially applicable to all members of the international community across the range of activities that they carry out or authorise and in respect of the protection of all aspects of the environment. From the large body of international agreements and other acts it is possible to discern general rules and principles that have broad, if not necessarily universal, support and are frequently endorsed in practice. These are:

- (1) the obligation reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, namely that states have sovereignty over their natural resources and the responsibility not to cause transboundary environmental damage;
- (2) the principle of preventive action;
- (3) the principle of cooperation;
- (4) the principle of sustainable development;
- (5) the precautionary principle;
- (6) the polluter pays principle; and
- (7) the principle of common but differentiated responsibility.

In the absence of clear judicial authority, and in view of the conflicting interpretations under state practice, it is frequently difficult to establish the parameters or the precise international legal status of each general principle or rule. The application of each principle in relation to a particular activity or incident, and its consequences, must be considered on the facts and circumstances of each case, having regard to several factors, including: the source of the principle; its textual content and language; the particular activity at issue; the environmental and other consequences of the activity; and the circumstances in which it occurs (including the actors and the geographical region). Some general principles or rules reflect customary law, others may reflect emerging legal obligations, and yet others might have a less developed legal status. In each case, however, the principle or rule has broad support and is reflected in extensive state practice through repetitive use or reference in an international legal context.

Of these general principles and rules, Principle 21/Principle 2, the prevention and cooperation principles, are sufficiently well established to provide the basis for an international cause of action; that is to say, to reflect an international customary legal obligation the violation of which would give rise to a free-standing legal remedy. The same may be said generally in respect of the precautionary principle in the European context, and perhaps also more globally in respect of particular activities or subject areas. The status and effect of the other principles are less clear, although they may bind as treaty obligations or, in particular contexts, as customary obligations. Whether they give rise to actionable obligations of a general nature is open to question. Finally, the principles and rules described in this chapter should be distinguished from the general principles of international law described in Chapter 4,³ as well as the substantive rules

M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010), Part III; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), ch. 3.

² *Belgium/Netherlands (Iron Rhine arbitration)*, Award of 24 May 2005, Permanent Court of Arbitration Award Series, *The Iron Rhine (IJzeren Rijn) arbitration (Belgium–Netherlands)* Award of 2005 (2007) (the 'Iron Rhine case'), para. 223.

³ See Chapter 4, pp. 125–7.

establishing environmental standards (i.e. air and water quality, conservation of biodiversity) and rules establishing techniques for implementing those standards (i.e. environmental impact assessment, participation in decision-making, access to information, economic instruments).

Principles and Rules

References to principles and rules of general application have long been found in the preambles to treaties and other international acts, and in the jurisprudence of international courts and tribunals. More recently, however, principles of general or specific application have been incorporated into the operative part of some treaties. Article 3 of the 1992 Climate Change Convention lists 'Principles' intended to guide the parties '[i]n their actions to achieve the objective of the Convention and to implement its provisions'. Article 3 of the 1992 Biodiversity Convention introduces the text of Principle 21 of the Stockholm Declaration as the sole 'Principle'. Other treaties follow a similar approach.⁴

What consequences flow from the characterisation of a legal obligation as a legal principle or a legal rule? This question has hardly been addressed in detail by international courts and tribunals, although it was referred to by the arbitral tribunal in the *Iron Rhine* case, noting that there was

considerable debate as to what, within the field of environmental law, constitutes 'rules' or 'principles'; what is 'soft law'; and which environmental treaty law or principles have contributed to the development of customary international law.⁵

The umpire in the *Gentini* case, in 1903, adopted the following distinction, which may provide some guidance about the legal effect of principles and their relationship to rules:

A 'rule' 'is essentially practical and, moreover, binding . . . [T]here are rules of art as there are rules of government' while principle 'expresses a general truth, which guides our action, serves as a theoretical basis for the various acts of our life, and the application of which to reality produces a given consequence'.⁶

In this sense, positive rules of law may be treated as the 'practical formulation of the principles', and the 'application of the principle to the infinitely varying circumstances of practical life aims at bringing about substantive justice in every case'.⁷ This view suggests that principles and rules

⁴ See e.g. 1992 OSPAR Convention, Art. 2 (General obligations); 1992 Baltic Convention, Art. 3 (Fundamental principles and obligations); 1992 Watercourses Convention, Art. 2 (General provisions); 1992 Industrial Accidents Convention, Art. 3 (General provisions); 2002 ASEAN Transboundary Haze Pollution Agreement, Art. 3 (Principles); 2003 Carpathian Convention, Art. 2; 2009 Southern Ocean Fisheries Resources Convention, Art. 3 (Conservation and Management Principles and Approaches).

⁵ *Iron Rhine* case, para. 58.

⁶ *Gentini* case (*Italy v. Venezuela*) 10 RIAA 551, in J. H. Ralston and W. T. S. Doyle, *Venezuelan Arbitrations of 1903 Etc.* (1904), 720, 725, cited in B. Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (London: Stevens, 1953, reprinted 2006), 376.

⁷ *Ibid.*

point to particular decisions about legal obligations in particular circumstances, but they differ in the character of the direction they give. Rules are applicable in an all-or-nothing fashion . . . [A principle] states a reason that argues in one direction, but does not necessitate a particular decision . . . All that is meant, when we say that a particular principle is a principle of our law, is that the principle is one which officials must take into account, if it is relevant, as a consideration inclining in one way or another.⁸

This distinction finds some support in the practice of international courts,⁹ and allows the conclusion that principles ‘embody legal standards, but the standards they contain are more general than commitments and do not specify particular actions’, unlike rules.¹⁰ The fact that legal principles, like rules, can have international legal consequences has focused attention on their content while being elaborated in treaties. The negotiations of the 1992 Climate Change Convention reflected differing views on the need to adopt a section on ‘Principles’ at all: generally, developing countries supported the inclusion of principles, whereas developed countries opposed them. The US and some other ‘common law’ delegations were concerned that the requirements included in Article 3 might be subject to the Convention’s dispute settlement provisions or create specific commitments beyond those set out in Article 4 and elsewhere. Although the US failed in its efforts to have the whole of Article 3 deleted, or for the text to be amended to make clear that Article 3 could not be subject to the dispute settlement provisions, the US amendments were accepted to limit the application of principles to informing obligations under the Convention.¹¹ A similar concern to limit the scope of application of a principle was reflected by the UK declaration made upon signature of the 1992 Biodiversity Convention, declaring the understanding that ‘Article 3 of the Convention . . . sets out a guiding principle to be taken into account in the implementation of the Convention’, implying that no legal consequences arose outside the Convention, and that within the Convention, Article 3 did not give rise to a rule in the sense proposed by the umpire in the *Gentini* case. It is far from clear, however, that the plain meaning of Article 3 supports the UK’s understanding, especially when the text is compared to Article 3 of the Climate Change Convention, and in particular the introductory ‘chapeau’ which seeks to limit the effect of the principles identified thereunder.

The international community has not adopted a binding international instrument of global application that purports to set out the general rights and obligations of the international community on environmental matters. No equivalent to the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights or the International Covenant on Economic, Social and Cultural Rights has yet been adopted, and none appears imminent. Any effort to identify general principles and rules of international environmental law must necessarily be based on a considered assessment of state practice, including the adoption and

⁸ R. Dworkin, *Taking Rights Seriously* (London: Duckworth, 1977), 24, 26.

⁹ Case C-2/90, *Commission v. Belgium* [1993] 1 CMLR 365, where the ECJ relied on the principles of self-sufficiency and proximity (in the Basel Convention) to help it justify a conclusion (*ibid.*, paras. 34–5).

¹⁰ D. Bodansky, ‘The United Nations Framework Convention on Climate Change: A Commentary’, 18 *Yale Journal of International Law* 451 at 501 (1993).

¹¹ There is no self-standing article on principles in the 2015 Paris Agreement. Art. 2(2) provides that the Agreement ‘will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances’. There is also a preambular reference to parties being ‘guided’ by the Convention’s principles.

implementation of treaties and other international legal acts, as well as the growing number of decisions of international courts and tribunals.¹² The efforts of governmental and non-governmental lawyers in assessing the evidence which supports the existence of principles and rules has provided some guidance, and has influenced subsequent international lawmaking. The 1978 UNEP Draft Principles and the 1986 WCED Legal Principles supplemented the 1972 Stockholm Declaration and influenced the 1992 Rio Declaration, which continues to reflect ‘to the extent any international instrument can do so, the current consensus of values and priorities in environment and development’.¹³ Since UNCED, further guidance may be obtained from the International Law Commission’s draft Articles on Prevention of Transboundary Harm from Hazardous Activities (2001),¹⁴ the International Law Association’s New Delhi Declaration of Principles of International Law Relating to Sustainable Development (2002),¹⁵ and the IUCN’s Draft Covenant on Environment and Development (2010, 4th edn).¹⁶

SOVEREIGNTY OVER NATURAL RESOURCES AND THE RESPONSIBILITY NOT TO CAUSE DAMAGE TO THE ENVIRONMENT OF OTHER STATES OR TO AREAS BEYOND NATIONAL JURISDICTION

The rules of international environmental law have developed within the context of two fundamental objectives pulling in opposing directions: that states have sovereign rights over their natural resources; and that states must not cause damage to the environment. These objectives are set out in Principle 21 of the Stockholm Declaration, which provides that:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Principle 21 remains the cornerstone of international environmental law; twenty years after its adoption, states negotiating the Rio Declaration were unable to improve significantly upon, develop, scale back or otherwise alter the language in adopting Principle 2. At UNCED, two words were added to recognise that states have the right to pursue ‘their own environmental *and developmental* policies’. Principle 21 and Principle 2 each comprise two elements which cannot be separated without fundamentally changing their sense and effect: the sovereign right

¹² On sources of state practice, see Chapter 4, pp. 120–1.

¹³ I. Porras, ‘The Rio Declaration: A New Basis for International Co-operation’, 1 *Review of European Community and International Environmental Law* 245 (1992). See also J. E. Viñuales (ed.), *The Rio Declaration on Environment and Development: A Commentary* (Oxford: Oxford University Press, 2015).

¹⁴ ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, ‘Report of the International Law Commission on the Work of Its Fifty-Third Session’, *Yearbook of the International Law Commission* (2001-II), Part 2, 148.

¹⁵ Rather less assistance is to be derived from the Institut de Droit Internationale’s Resolution on the Environment (1997), www.idi-ii.org/jidiE/resolutions/E1997_str_02_en.pdf; see P. Sands, ‘The New “Architecture of International Environmental Law” (or “The Law Professor and the Strange Case of the Missing Green Glasses”)', *RBDI* 512 (1997).

¹⁶ See further: www.iucn.org/knowledge/publications_doc/publications/?6512/Draft-International-Covenant-on-Environment-and-Development

of states to exploit their own natural resources; and the responsibility, or obligation, not to cause damage to the environment of other states or of areas beyond the limits of national jurisdiction. Taken together (state practice since 1972 has assiduously avoided their decoupling), they establish the basic obligation underlying international environmental law and the source of its further elaboration in rules of greater specificity. That Principle 21 reflects customary law was confirmed by the ICJ's 1996 Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*.

Sovereign Rights Over Natural Resources

The principle of state sovereignty allows states within limits established by international law to conduct or authorise such activities as they choose within their territories, including activities that may have adverse effects on their own environment. This fundamental principle underlies the first part of Principle 21/Principle 2. The extension of the sovereignty principle into environmental affairs pre-dates the Stockholm Declaration and is rooted in the principle of permanent sovereignty over natural resources as formulated in various resolutions of the UN General Assembly adopted from time to time after 1952.¹⁷ These resolutions were closely related to arrangements between states and foreign private companies for the exploitation of natural resources, particularly oil and minerals, in developing countries. They addressed the need to balance the rights of the sovereign state over its resources with the desire of foreign companies to ensure legal certainty in the stability of investments.¹⁸ A landmark resolution was adopted by the UN General Assembly in 1962, when it resolved that the 'rights of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development of the well-being of the people of the state concerned'.¹⁹ The resolution reflected the right to permanent sovereignty over national resources as an international legal right, and has been accepted by some international tribunals as reflecting customary international law.²⁰

By the 1970s, limits to the application of the principle of state sovereignty over natural resources were emerging as the international community recognised a need to cooperate to protect the environment. In 1972, before the Stockholm Conference, the UN General Assembly declared that 'each country has the right to formulate, in accordance with its own particular situation and in full enjoyment of its national sovereignty, its own national policies on the human environment'.²¹ The relationship between permanent sovereignty over natural resources and responsibilities for the environment was formally recognised by Principle 21.

The importance placed by states on the principle of permanent sovereignty over natural resources is also reflected by its frequent invocation, in various forms, in international environmental agreements and during their negotiation. The 1933 London Convention affirmed that all animal trophies were 'the property of the Government of the territory concerned'.²²

¹⁷ See e.g. UNGA Res. 523 (VI) (1950); Res. 626 (VII) (1952); Res. 837 (IX) (1954); Res. 1314 (XIII) (1958); Res. 1515 (XV) (1960).

¹⁸ On foreign investment and environmental protection see further Chapter 18, pp. 900–15.

¹⁹ UNGA Res. 1803 (XVII) (1962).

²⁰ *Texaco Overseas Petroleum Co. and California Asiatic Oil Co. v. Libya*, 53 ILR 389 (1977), para. 87; *Kuwait v. American Independent Oil Co.*, 21 ILM 976 (1982).

²¹ UNGA Res. 2849 (XXVI) (1971). ²² Art. 9(6).

The 1971 Ramsar Convention emphasised that the inclusion of national wetland sites in its List of Wetlands did ‘not prejudice the exclusive sovereign rights of . . . the party in whose territory the wetland is situated’.²³ The 1983 International Tropical Timber Agreement recalled ‘the sovereignty of producing members over their natural resources’.²⁴ More recent treaties also refer to the sovereign rights of states over natural resources in their territory: the Preamble to the 1989 Basel Convention recognised that ‘all states have the sovereign right to ban the entry or disposal of foreign hazardous wastes and other wastes in their territory’; the Preamble to the 1992 Climate Change Convention reaffirmed ‘the principle of sovereignty of states in international co-operation to address climate change’; and the 1992 Biodiversity Convention more specifically reaffirmed that states have ‘sovereign rights . . . over their natural resources’, and that ‘the authority to determine access to genetic resources rests with the national governments and is subject to national legislation’.²⁵ The 2010 Nagoya Protocol to the Biodiversity Convention, governing access to genetic resources within the territory of states parties, establishes a requirement for prior informed consent of the party providing such resources ‘[i]n exercise of sovereign rights over natural resources’.²⁶

Sovereignty and Extraterritoriality

The sovereign right to exploit natural resources includes the right to be free from external interference over their exploitation. This aspect of Principle 21/Principle 2 is brought into question in disputes over the extraterritorial application of environmental laws of one state to activities taking place in areas beyond its national jurisdiction, either within the jurisdiction of another state or in activities beyond national jurisdiction (this is to be distinguished from the situation identified by the arbitral tribunal in the *Iron Rhine* case, expressing the view that, ‘where a state exercises a right under international law within the territory of another state, considerations of environmental protection also apply’).²⁷ In 1893, the arbitral tribunal in the *Fur Seal* arbitration rejected a claim by the US to be entitled to protect fur seals in areas beyond the 3-mile limit of the territorial sea and the right to interfere in the internal affairs of other states to secure the enjoyment of their share in the ‘common property of mankind’.²⁸ Nearly one hundred years later, the US banned the import of yellow-fin tuna caught by Mexican vessels, in Mexico’s exclusive economic zone and on the high seas, with purse-seine nets, the compliance of which with US environmental protection standards could not be proved. This ‘extra-jurisdictional’ application of US environmental standards was rejected by a GATT panel as being contrary to the GATT, holding that a country ‘can effectively control the production or consumption of an exhaustible natural resource only to the extent that the production or consumption is under its jurisdiction’ and that to allow the ‘extra-jurisdictional’ application of its environmental law would allow the US to ‘unilaterally determine the conservation policies’ of Mexico.²⁹ However, in *Shrimp/Turtle* the WTO Appellate Body took a broader approach, and recognised the existence of a ‘sufficient nexus’ between migratory and endangered populations of sea turtles located in Asian waters and the United States to allow the latter to claim an interest

²³ Art. 2(3). ²⁴ Art. 1. See now 2006 International Tropical Timber Agreement, Preamble, para. (d).

²⁵ Art. 15(1). Cf. the 1983 FAO Undertaking on Plant Genetic Resources and the 1989 Agreed Interpretation, recognising that plant genetic resources are a common ‘heritage of mankind’ (Chapter 10, p. 425).

²⁶ Art. 6. ²⁷ *Iron Rhine* case, para. 223. ²⁸ Chapter 11, pp. 509–11. ²⁹ Chapter 18, pp. 855–6

in their conservation.³⁰ The traditional and absolute prohibition on extraterritorial (or extra-jurisdictional) application of national environmental laws recognised by the earlier decisions is consistent with the principle of absolute sovereignty over natural resources. Those decisions do not rest easily, however, with a more modern conception of an ecologically interdependent world in which limits are placed on the exercise of sovereignty or sovereign rights, an approach to which the Appellate Body seemed sympathetic.³¹

In the absence of generally accepted international standards of environmental protection and conservation, states with strict national environmental standards may seek to extend their application to activities carried out in areas beyond their territory, particularly where they believe that such activities cause significant environmental damage to shared resources (such as migratory species, transboundary watercourses, or air quality and the climate system) or affect vital economic interests. For 'shared natural resources' such as the high seas and atmosphere, it will often be difficult, if not impossible, to draw a clear line between natural resources over which a state does and does not have sovereignty or exercise sovereign rights. In such circumstances, it is unlikely that the principle of territorial sovereignty, or permanent sovereignty over natural resources, can provide much assistance in allocating rights and responsibilities of states over environmental policy.

The permissibility of the extraterritorial application of national laws remains an open question in international law. The PCIJ stated that 'the first and foremost restriction imposed by international law upon a state is that – failing the existence of a permissive rule to the contrary – it may not exercise its power in any form in the territory of another state outside its territory except by virtue of a permissive rule derived from international custom or from a convention'.³² However, in the same case, the PCIJ went on to state that 'international law as it stands at present' does not contain 'a general prohibition to states to extend the application of their laws and the jurisdiction of their courts to persons, property and acts outside their territory', and that the territoriality of criminal law was 'not an absolute principle of international law and by no means coincides with territorial sovereignty'.³³ Subsequent state practice, as well as decisions of international tribunals, has not determined precisely the circumstances in which a state may take measures over activities outside its territory in relation to the conservation of shared resources. In the *Fisheries Jurisdiction* case, Spain challenged the application and enforcement by Canada of its fisheries conservation legislation in areas beyond its exclusive economic zone, but the ICJ declined jurisdiction, and the case did not reach the merits phase.³⁴ The right of states to exercise jurisdiction, either by legislation or adjudication, over activities in other states, or in areas beyond national jurisdiction, which are harmful to the environment at the global, regional or local level, could be justified on several grounds. First, corporations carrying on activities abroad might be subject to the environmental laws of their state of registration or incorporation, by

³⁰ *Shrimp/Turtle* case, para. 133 (the decision is difficult to square with the Appellate Body's claim that it was not 'pass [ing] upon the question of whether there is an implied jurisdictional limitation in Article XX(g), and, if so, the nature or extent of that limitation'). See further Chapter 18, pp. 859–65.

³¹ See also the Appellate Body's decision in *Brazil – Retreaded Tyres*, which appears to adopt a more permissive approach in evaluating the link between trade measures and complex public health or environmental problems (para. 151); Chapter 18, pp. 867–9. In *EC – Seal Products*, the Appellate Body noted the statements in *Shrimp/Turtle* but 'while recognizing the systemic importance of the question of whether there is an implied jurisdictional limitation in Article XX(a), and, if so, the nature or extent of that limitation', it decided not to examine the question in that case further (para. 5.173).

³² *Lotus* case (*France v. Turkey*), PCIJ Ser. A No. 10, 19–20. ³³ *Ibid.* ³⁴ Chapter 11, pp. 527–8.

application of the 'nationality' principle of jurisdiction. International law does not prevent a state from exercising jurisdiction within its own territory over its nationals (including corporations) who reside in a foreign state, although the power to enforce such laws depends upon the nationals being in the territorial jurisdiction or having assets therein against which judgment can be enforced.³⁵ The application of the 'nationality' principle is likely to cause difficulty, however, since the foreigner abroad might be subject to the concurrent jurisdiction of the home state of registration or incorporation and the host state in which it carries out its activities, with the home state having more stringent rules of environmental protection.³⁶ This may lead to jurisdictional disputes where some states use lower standards of environmental protection perhaps to gain economic advantage and attract foreign investment, and other states apply the nationality principle and require their companies to apply national environmental protection rules wherever they carry out their activities.³⁷ In such circumstances, it has been suggested that the home state must not require compliance with its laws at the expense of its duty to respect the territorial sovereignty of the host state. When faced with such a conflict, a court would be likely to balance the public policy of the home state, the interests of the host state, and the damage to international comity if it gave precedence to the laws of the home state, and only accord priority to those laws 'where the balance of interest clearly lies in that direction'.³⁸ The factors applied by a court will also need to be applied by reference to the environment that is being affected or damaged. It would be difficult to justify a home state's taking measures where only the environment of the host state was being damaged. But, if the damage was being caused to the environment of the home state or to areas beyond national jurisdiction (global commons), then the home state might have a stronger basis for asserting jurisdiction extraterritorially.

This latter situation creates a second possible basis for allowing the extraterritorial application of national laws: where activities carried out in one state have, or are likely to have, 'effects' in another state, recourse might be had to the 'objective' application of the territorial principle, otherwise known as the 'effects' doctrine. However, the application of the 'effects' principle is said to have 'doubtful consistency' with international law: the justification for assertions of jurisdiction on the basis of an alleged 'effects' principle of jurisdiction has not been generally accepted, and the matter is still one of controversy.³⁹

The extraterritorial application of national environmental laws has been particularly controversial in relation to trade issues. Principle 12 of the Rio Declaration declares that unilateral actions addressing environmental challenges 'outside the jurisdiction of the importing country should be avoided' and that 'environmental measures should, as far as possible, be based on an international consensus'. The Rio Declaration and Agenda 21 did not, however, prohibit per se all

³⁵ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (Harlow: Longman, 1992, 9th edn), vol. I, Part 1, 462. In application of this approach, see *Dow Chemical Co. v. Alfaro*, 768 SW 2d 674 at 681 (Texas, 1990), where a Texan court held that Costa Rican farm workers were entitled to bring a claim for injuries caused by a pesticide manufactured in the United States and exported to Costa Rica. On enforcement jurisdiction generally, see Chapter 5, pp. 153–66.

³⁶ On this point, see the OECD Guidelines on Multinationals, ch. 3, p. 92.

³⁷ Bilateral and regional free trade agreements, especially those instituted by the United States, have sought to alleviate this concern by including environmental chapters that require enforcement of environmental laws and standards by participating states: see further, www.state.gov/e/oes/eqt/trade

³⁸ Jennings and Watts, *Oppenheim's International Law*, vol. I, Part 1, 464–6, citing, inter alia, *Timberlane Lumber Co. v. Bank of America*, 66 ILR 270 (1976–7); *Laker Airways v. Pan American World Airways*, 23 ILM 748 at 751 (1984). See also *Gagarimabu v. Broken Hill Proprietary Co. Ltd* [2001] VSC 517 (21 December 2001).

³⁹ Jennings and Watts, *Oppenheim's International Law*, vol. I, Part 1, 475. That said, the decision in *Shrimp/Turtle* may be seen to be connected to the application of the 'effects' doctrine (see n. 30).

unilateral environmental measures,⁴⁰ an approach which was subsequently endorsed by the WTO Appellate Body (subject to certain conditions being satisfied) and in the WSSD Plan of Implementation.⁴¹ The challenge for the international community remains to determine the circumstances in which, in the absence of international consensus on agreed environmental standards, a state will be permitted, under the general rules of international law and specific WTO rules, to adopt unilateral environmental measures and apply them extraterritorially.⁴² This issue is particularly critical in the climate change context, given indications by some states that they are considering unilateral measures to promote climate change mitigation and faster uptake of renewable energy technologies.⁴³

Responsibility Not to Cause Environmental Damage

The second element of Principle 21/Principle 2 reflects the view of states that they are subject to environmental limits in the exercise of their rights under the principle of permanent sovereignty over natural resources.⁴⁴ In the form presented by Principle 21/Principle 2, the responsibility not to cause damage to the environment of other states or of areas beyond national jurisdiction has been accepted as an obligation by all states, without prejudice to its application on a case-by-case basis. Following the ICJ's 1996 Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*, there can be no question that Principle 21 reflects a rule of customary international law, placing international legal constraints on the rights of states in respect of activities carried out within their territory or under their jurisdiction.

Saying that Principle 21/Principle 2 reflects customary international law is not, however, decisive, and will be of only partial assistance in support of an international claim. In the context of activity that causes pollution and environmental degradation, Principle 21/Principle 2 indicates the need to address other questions. What is environmental damage? What environmental damage is prohibited (any damage, or just damage which is serious or significant)? What is the standard of care applicable to the obligation (absolute, strict or fault-based)? What are the consequences of a violation (including appropriate reparation)? And what is the extent of any liability (including the measure of damages)? These and related questions are considered in Chapter 16 below.

The responsibility of states not to cause environmental damage in areas outside their jurisdiction pre-dates the Stockholm Conference, and is related to the obligation of all states 'to protect within the territory the rights of other states, in particular their right to integrity and inviolability in peace and war'.⁴⁵ This obligation was subsequently relied upon, and elaborated, by the arbitral tribunal in the much-cited *Trail Smelter* case, which stated that:

⁴⁰ Agenda 21, para. 39.3(d), includes a number of factors applicable to trade-related environmental measures, which may also provide guidance on the permissibility of other extraterritorial environmental measures (see Chapter 18, pp. 848–50).

⁴¹ WSSD Plan of Implementation, para. 95 (restating the language of the Rio Declaration and Agenda 21).

⁴² On the trade-environment issue, see generally Chapter 18, pp. 848–70.

⁴³ On trade and climate change measures, see WTO-UNEP, *Trade and Climate Change*, WTO-UNEP Report (2009).

⁴⁴ For an excellent account of the negotiating history of Principle 21, which tends to support this view, see L. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 at 485–93 (1972).

⁴⁵ PCA, *Palmas* case, 2 HCR (1928) 84 at 93.

Under the principles of international law . . . no state has the right to use or permit the use of territory in such a manner as to cause injury by fumes in or to the territory of another of the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.⁴⁶

Most writers accept this formulation as a rule of customary international law. For example, the Rapporteur to the ILA Committee on Legal Aspects of the Environment concluded from an examination that state practice was founded upon the rule in the *Trail Smelter* case.⁴⁷ It was also cited, with apparent approval, by Judge de Castro in his dissent in the *Nuclear Tests* case.⁴⁸ In that case, Australia had asked the ICJ to declare that the carrying out of further atmospheric nuclear tests was inconsistent with applicable rules of international law and would be unlawful 'in so far as it involves the modification of the physical conditions of and over Australian territory [and] pollution of the atmosphere and of the resources of the seas'.⁴⁹

In fact, consistent state practice is not readily discernible. As will be seen in Chapter 16, there are relatively few claims which have been brought by states relying upon the rule reflected in Principle 21/Principle 2, and one is left to rely upon state practice as evidenced in particular by participation in and support for treaties and other international acts, as well as states' statements as to what they consider to be the extent of their obligations. Following the Chernobyl accident in 1986, a discussion under the auspices of the IAEA threw some light on the views of states, although the record on this discussion alone cannot be considered as representing a comprehensive view.⁵⁰

The general rule relied upon in the *Trail Smelter* case derives from an extension of the principle of good neighbourliness. Although the UN Charter does not expressly address environmental issues, Article 74 of the Charter reflects the agreement of the UN members that 'their policy in their metropolitan areas must be based on the general principle of good neighbourliness' and must take account of 'the interests and well-being of the rest of the world, in social, economic and commercial matters'. The principle of good neighbourliness underlies the *dicta* of the ICJ that the principle of sovereignty embodies 'the obligation of every state not to allow its territory to be used for acts contrary to the rights of other states'.⁵¹ In the *Lac Lanoux* arbitration, involving the proposed diversion of an international river by an upstream state, the arbitral tribunal affirmed that a state has an obligation not to exercise its rights to the extent of ignoring the rights of another:

⁴⁶ *United States v. Canada*, 3 RIAA 1907 (1941); citing Eagleton, *Responsibility of States* (1928), 80; see Chapter 7, pp. 254–5; and Chapter 16, pp. 742–3.

⁴⁷ International Law Association, 'Report of the Committee on Legal Aspects of the Environment', 60th Conference Report, 157 at 163.

⁴⁸ *Australia v. France* (1974) ICJ Reports 253 at 389. He stated: 'If it is admitted as a general rule that there is a right to demand prohibition of the emission by neighbouring properties of noxious fumes, the consequences must be drawn, by an obvious analogy, that the Applicant is entitled to ask the Court to uphold its claim that France should put an end to the deposit of radio-active fall-out on its territory.'

⁴⁹ *Nuclear Tests* cases, ICJ Pleadings, vol. I, 27; see further Chapter 7, pp. 255–6.

⁵⁰ Chapter 16, pp. 744–5. The Fukushima Daiichi nuclear disaster in Japan in 2011 may generate similar discussion, though so far most damage claims have involved civil liability suits against the plant operator, Tokyo Electric Power Company.

⁵¹ *Corfu Channel* case (*UK v. Albania*) (1949) ICJ Reports 4 at 22.

France [the upstream state] is entitled to exercise her rights; she cannot ignore the Spanish interests. Spain [the downstream state] is entitled to demand that her rights be respected and that her interests be taken into consideration.⁵²

The thread was further developed in 1961 when the UN General Assembly declared, specifically in relation to radioactive fallout, that:

The fundamental principles of international law impose a responsibility on all states concerning actions which might have harmful biological consequences for the existing and future generations of peoples of other states, by increasing the levels of radioactive fallout.⁵³

By 1972, shortly before the Stockholm Conference, the General Assembly was able to direct that the Conference must 'respect fully the exercise of permanent sovereignty over natural resources, as well as the right of each country to exploit its own resources in accordance with its own priorities and needs and in such a manner as to avoid producing harmful effects on other countries'.⁵⁴

The development of the second element of Principle 21/Principle 2 can also be traced to earlier environmental treaties. The 1951 International Plant Protection Convention expressed the need to prevent the spread of plant pests and diseases across national boundaries.⁵⁵ The 1963 Nuclear Test Ban Treaty prohibits nuclear tests if the explosion would cause radioactive debris 'to be present outside the territorial limits of the state under whose jurisdiction or control such explosion is conducted';⁵⁶ and the 1968 African Conservation Convention requires consultation and cooperation between parties where development plans are 'likely to affect the natural resources of any other state'.⁵⁷ Under the 1972 World Heritage Convention, the parties agreed that they would not take deliberate measures which could directly or indirectly damage heritage which is 'situated on the territory' of other parties.⁵⁸

Principle 21 can thus be said to have developed earlier state practice. It has since been affirmed in many General Assembly resolutions and acts of other international organisations. Shortly after the Stockholm Conference, Principle 21, with Principle 22, was expressly stated by UN General Assembly Resolution 2996 to lay down the 'basic rules' governing the international responsibility of states with regard to the environment. It was also the basis of Article 30 of the Charter of Economic Rights and Duties of States, which provides that:

All states have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.⁵⁹

⁵² *France v. Spain* (1957) 24 ILR 101, at 140. See also *Indus Waters Arbitration*, Partial Award, 18 February 2013, para. 436.

⁵³ UNGA Res. 1629 (XVI) (1961).

⁵⁴ UNGA Res. 2849 (XXVI) (1972), para. 4(a).

⁵⁵ Preamble.

⁵⁶ Art. I(1)(b).

⁵⁷ Art. XVI(1)(b).

⁵⁸ Art. 6(3).

⁵⁹ UNGA Res. 3281 (XXVII) (1974).

It was endorsed by the 1975 Final Act of the Helsinki Conference on Security and Co-operation in Europe,⁶⁰ Principle 3 of the 1978 UNEP Draft Principles (which requires states to ensure that ‘activities within their jurisdiction or control do not cause damage to the natural systems located within other states or in areas beyond the limits of national jurisdiction’) and the 1982 World Charter for Nature (which declares the need to ‘safeguard and conserve nature in areas beyond national jurisdiction’).⁶¹ Perhaps more compelling is the reference to Principle 21 in later treaties. It has been referred to,⁶² or wholly incorporated,⁶³ in the preamble to several treaties, and was fully reproduced in the operational part of a treaty, for the first time, as Article 3 of the 1992 Biodiversity Convention without express limitation to matters within the scope of the Convention.⁶⁴ Principle 2 of the Rio Declaration was also incorporated into the Preamble to the 1992 Climate Change Convention.

Similar language to the second element of Principle 21 also appears in treaties. The 1978 Amazonian Treaty fudges the issue of the legal status of Principle 21, declaring that ‘the exclusive use and utilisation of natural resources within their respective territories is a right inherent in the sovereignty of each state and that the exercise of this right shall not be subject to any restrictions other than those arising from International Law’.⁶⁵ The 1981 Lima Convention goes a little further by requiring activities to be conducted so that ‘they do not cause damage by pollution to others or to their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not, as far as possible, spread beyond the areas where [they] exercise sovereignty and jurisdiction’.⁶⁶ The 1982 UNCLOS transforms the ‘responsibility’ into a ‘duty’, although it is unclear what was intended by the change. Under Article 193 of UNCLOS, states have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment. UNCLOS shifts the emphasis from a negative obligation to prevent harm to a positive commitment to preserve and protect the environment. To that end, however, Article 194(2) does provide that states:

shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other states and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with [the] Convention.⁶⁷

The 1985 ASEAN Convention goes further, by recognising the second element of Principle 21 as a ‘generally accepted principle of international law’.⁶⁸

Against this background, the time was plainly ripe for confirmation of the customary status of the obligation not to cause transboundary environmental harm. France’s 1995 announcement of its resumption of underground nuclear tests provided the unlikely catalyst. In its Order rejecting New Zealand’s request, the ICJ stated, somewhat cryptically, that its Order was ‘without prejudice

⁶⁰ 14 ILM 1292 (1975), 1 August 1975. ⁶¹ Para. 21(e). ⁶² See e.g. 1992 Baltic Convention.

⁶³ See e.g. 1972 London Convention (but note that Principle 21 does not appear in the 1996 London Protocol); 1979 LRTAP Convention; 1985 Vienna Convention.

⁶⁴ See UK Declaration, Chapter 4, p. 112. ⁶⁵ Art. IV. ⁶⁶ Art. 3(5); 1983 Quito LBS Protocol, Art. XL.

⁶⁷ 1986 South Pacific Natural Resources Convention, Art. 4(6). ⁶⁸ Art. 20.

to obligations of States to respect and protect the natural environment, obligations to which both New Zealand and France have in the present instance reaffirmed their commitment'.⁶⁹ A review of the pleadings indicates that New Zealand's affirmation that Principle 21/Principle 2 reflected a 'well established proposition of customary international law' was not opposed by France.⁷⁰ It was also endorsed by Judge Weeramantry in his dissenting opinion.⁷¹

Within two months of the ICJ's Order, oral arguments opened at the ICJ in the *Legality of the Threat or Use of Nuclear Weapons* Advisory Opinion proceedings. Several states argued that Principle 21/Principle 2 reflected customary law, and none challenged that view (although some argued that they did not consider the principles to be of relevance to the case).⁷² In its Advisory Opinion, the ICJ stated that:

The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.⁷³

It is noteworthy that the ICJ did not merely restate the language of Principle 21 and Principle 2, but not immediately apparent that the ICJ intended to effect any material changes with its reformulation. In certain respects, the formulation adopted by the ICJ may be broader than that of Principle 21/Principle 2.⁷⁴

Conclusion

The support given to the rule reflected in Principle 21 (and now Principle 2) by states, by the ICJ and by other international actors over the past five decades indicates the central role it now plays. As the *Indus Waters* arbitral tribunal confirmed in its 2013 Partial Award, '[t]here is no doubt that States are required under contemporary customary international law to take environmental protection into consideration when planning and developing projects that may cause injury to a bordering State'.⁷⁵ The rule has been developed through the adoption of environmental agreements that establish specific and more detailed obligations giving effect to the basic objectives, as well as national environmental laws. The scope and application of the rule, in particular to the difficult question of what constitutes 'environmental harm' (or damage) for the purposes of triggering liability and allowing international claims to be brought, are considered in Chapter 16. At the very least, Principle 21 and Principle 2 confirm that the rights of states over

⁶⁹ (1995) ICJ Reports 288, para. 64.

⁷⁰ New Zealand Request, para. 98, also CR/95/20, 10-12; and CR/95/20, 91. See also *Yearbook of International Environmental Law* 531 at 533 (1995); and P. Sands, 'Pleadings and the Pursuit of International Law: Nuclear Tests II (*New Zealand v. France*)', in A. Anghie and G. Sturgess (eds.), *Legal Visions of the 21st Century: Essays in Honour of Judge Weeramantry* (The Hague/London: Kluwer, 1998), 601.

⁷¹ (1995) ICJ Reports 347. See also Judges Koroma (*ibid.*, 378) and Ad Hoc Judge Palmer (*ibid.*, 408, para. 80).

⁷² For a summary of the arguments, see *Yearbook of International Environmental Law* 542 (1995). On war and the environment, see Chapter 17, pp. 829-36.

⁷³ (1996) ICJ Reports 241, para. 29; cited with approval in the *Iron Rhine* case (2005), at para. 222.

⁷⁴ The word 'respect' could be seen as encompassing consequences where no 'harm' has arisen.

⁷⁵ *Indus Waters Arbitration*, Partial Award, 18 February 2013, para. 449.

their natural resources in the exercise of permanent sovereignty are not unlimited,⁷⁶ and are subject to significant constraints of an environmental character. Beyond that, the rule may provide a legal basis for bringing claims under customary law asserting liability for environmental damage. The specific application of the rule will turn on the facts and circumstances of each particular case or situation.

PRINCIPLE OF PREVENTIVE ACTION

Closely related to the Principle 21/Principle 2 obligation is the principle requiring the prevention of damage to the environment, and otherwise to reduce, limit or control activities that might cause or risk such damage.⁷⁷ The arbitral tribunal in the *Iron Rhine* recognised that '[t]oday, in international environmental law, a growing emphasis is being put on the duty of prevention' and that '[m]uch of international environmental law has been formulated by reference to the impact that activities in one territory may have on the territory of another'. It declared that the 'duty of prevention' is now 'a principle of general international law' that 'applies not only in autonomous activities but also in activities undertaken in implementation of specific treaties between the Parties'.⁷⁸ The approach was confirmed in the *Pulp Mills* case, where the ICJ pointed out that 'the principle of prevention, as a customary rule, has its origins in the due diligence that is required of a State in its territory'.⁷⁹ The interconnection of the obligation to prevent harm and a requirement to exercise due diligence was underscored by the ICJ, which characterised the obligation 'to act with due diligence' as:

an obligation which entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators.⁸⁰

This reflects the approach taken by the ILC in Article 3 of its draft Articles on Prevention of Transboundary Harm from Hazardous Activities (2001),⁸¹ which required states to 'take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof'. The Commentary to the draft Articles emphasised that the duty of due diligence

is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so. In that eventuality, the State of origin is required . . . to exert its best possible efforts to minimize the risk. In this sense, it does not guarantee that the harm would not occur.⁸²

⁷⁶ See the ILC's 2001 Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, Preamble. See also Art. 4 (Prevention).

⁷⁷ D. Goba, 'Le Principe de Prévention en Droit International de l'Environnement', 36 *Revue Ivoirienne de Droit* 9 (2004).

⁷⁸ *Iron Rhine* case (2005), paras. 59 and 222. See also *Indus Waters Arbitration*, Partial Award, 18 February 2013, para. 451.

⁷⁹ *Pulp Mills* case, para. 101. See also *Costa Rica v. Nicaragua* case, para. 104. ⁸⁰ *Ibid.*, para. 197.

⁸¹ ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, Art. 3.

⁸² Commentaries to the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission* (2001-II), Part 2, para. 7.

ITLOS and its Seabed Disputes Chamber have also followed and confirmed this approach. In its *Advisory Opinion on Responsibilities and Obligations in the Area*, the Seabed Disputes Chamber noted that the content of due diligence obligations ‘may not easily be described in precise terms’, since the concept is variable and may change over time, although the standard ‘has to be more severe for the riskier activities’.⁸³ As a consequence, ‘measures considered sufficiently diligent at a certain moment may become not diligent enough in light, for instance, of new scientific or technological knowledge’, and can ‘change in relation to the risks involved in the activity’.⁸⁴ The Chamber concluded that due diligence requires a State sponsoring activities in the Area ‘to take [reasonably appropriate] measures within its legal system’.⁸⁵ In this way, the obligation to prevent pollution is also closely connected to procedural obligations, including the requirement to carry out an environmental impact assessment.⁸⁶

In its *Sub-regional Fisheries Commission Advisory Opinion*, ITLOS considered the scope of flag states ‘responsibility to ensure’ – under UNCLOS and the applicable regional fisheries convention – that vessels flying their flags do not engage in illegal, unreported and unregulated (IUU) fishing activities in the exclusive economic zones of coastal state parties. The Tribunal advised that the expression ‘responsibility to ensure’ could be informed by the Seabed Disputes Chamber’s *Advisory Opinion in Responsibilities and Obligations in the Area* such that the obligation of a flag state not a party to the relevant regional convention was a due diligence obligation of conduct to ensure the vessels flying its flag are not involved in IUU fishing.⁸⁷

While closely related, the prevention obligation is distinguishable from Principle 21/Principle 2 in two ways. First, the latter arise from the application of respect for the principle of sovereignty, whereas the preventive principle seeks to minimise environmental damage as an objective in itself. This difference of underlying rationale relates to the second distinction: under the preventive principle, a state may be under an obligation to prevent not only transboundary harm, but also damage to the environment within its own jurisdiction,⁸⁸ including by means of appropriate regulatory, administrative and other measures.

The preventive principle requires action to be taken at an early stage and, if possible, before damage has actually occurred.⁸⁹ The principle is reflected in state practice with regard to a broad range of environmental objectives. Broadly stated, it prohibits activity that causes or may cause damage to the environment in violation of the standards established under the rules of international law. The preventive principle is supported by an extensive body of

⁸³ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011), para. 117.

⁸⁴ *Ibid.* ⁸⁵ *Responsibilities and Obligations in the Area*, paras. 117–20. ⁸⁶ *Pulp Mills* case, para. 204.

⁸⁷ *Sub-regional Fisheries Commission*, para. 129.

⁸⁸ See Judge N. Singh, ‘Foreword’, in R. D. Munro and J. G. Lammers (eds.), *Environmental Protection and Sustainable Development* (London: Graham & Trotman, 1987), xi–xii; in this regard, see also the principle of sustainable development, pp. 217–29.

⁸⁹ In the *Gabčíkovo–Nagymaros* case, the ICJ noted that it was ‘mindful that, in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage’ ((1997) ICJ Reports 7 at 78, para. 140).

domestic environmental protection legislation that establishes authorisation procedures, as well as the adoption of international and national commitments on environmental standards, access to environmental information, and the need to carry out environmental impact assessments in relation to the conduct of certain proposed activities. The preventive principle may, therefore, take a number of forms, including the use of penalties and the application of liability rules.

The preventive approach was endorsed, directly or indirectly, by the 1972 Stockholm Declaration,⁹⁰ the 1978 UNEP Draft Principles⁹¹ and the 1982 World Charter for Nature. Further, Principle 11 of the 1992 Rio Declaration required states to enact 'effective environmental legislation'.⁹² More significant for its development as an international legal principle is the fact that the principle has been relied upon or endorsed in a large number of treaties dealing with particular environmental media or activities (see Table 6.1).⁹³

Taken together, this extensive body of international commitments provides compelling evidence of: the wide support for the principle of preventive action; the different environmental media for which general preventive measures are required; the types of activities which should be regulated; and the basis upon which states should carry out their commitment to enact effective national environmental legislation pursuant to the general requirement of Principle 11 of the Rio Declaration.

COOPERATION

The principle of 'good neighbourliness' enunciated in Article 74 of the UN Charter in relation to social, economic and commercial matters has been translated into the development and application of rules promoting international environmental cooperation. This is traditionally considered by reference to the application of the maxim *sic utere tuo et alienum non laedas*. The principle is reflected in many treaties and other international acts, and is supported also by state practice, particularly in relation to hazardous activities and emergencies.⁹⁴ Principle 24 of the Stockholm Declaration reflects a general political commitment to international cooperation in matters concerning the protection of the environment, and Principle 27 of the Rio Declaration states rather more succinctly that 'States and people shall co-operate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development'. The importance attached to the principle of cooperation, and its practical significance, is reflected in many international instruments, such as the Preamble to the 1992 Industrial Accidents Convention, which underlined (in support of the Convention's specific commitments) 'the principles of

⁹⁰ Principles 6, 7, 15, 18 and 24. ⁹¹ Principle 1.

⁹² Other relevant provisions include Principle 14 (calling on states to prevent the relocation and transfer to other states of hazardous activities or substances) and Principle 15 (precautionary approach).

⁹³ e.g. 1991 Alpine Convention, Art. 2(c); Integrated Coastal Zone Management Protocol, Art. 10(1); 2003 Carpathians Convention, Art. 2.

⁹⁴ The maxim was invoked, for example, as a 'fundamental rule' by Hungary in its Original Application in the *Gabčíkovo-Nagymaros* Project case, para. 32 (citing in support of the maxim the *Corfu Channel* case (1949), the *Trail Smelter* case (1941), the Stockholm Declaration (1972), the World Charter for Nature (1982), the ILC Draft Articles on International Liability (1990) and the Rio Declaration (1992)).

TABLE 6.1 Prevention principle in international environmental treaties

Environmental area	Treaty example	Relevant provisions
Flora and fauna protection	1933 London Convention, and Protocol	Art. 12(2), para. 1
	1980 CCAMLR Convention	Art. 2(3)(a)
	2007 Gorilla Conservation Agreement	Art. 3(2)(j)
Occupational health	1949 Agreement for the Establishment of a General Fisheries Council for the Mediterranean	Art. [III]IV(h)
	1960 Ionising Radiation Convention	Art. 3(1)
Introduced pests and diseases	1951 Plant Protection Convention	Art. 1(1)
Marine pollution	1954 Oil Pollution Prevention Convention, Preamble	Preamble
	1969 CLC	Art. 1(7)
	1958 High Seas Convention	Art. 25
	1992 OSPAR Convention	Art. 2
	1996 London Protocol	Art. 2
	MARPOL 73/78	Preamble and Art. 1(1)
	1974 Paris LBS Convention	Art. 1
	2009 Revised Protocol to the 1992 Black Sea Convention	Arts. 1, 4, 6, 14 and 15
	2010 Nairobi Protocol	Preamble and Arts. 4, 6, 7 and 8
	1982 UNCLOS	Art. 194(1)
Freshwater pollution	1991 Madrid Protocol	Annex IV
	2003 Tehran Convention	Art. 4
	2003 Lake Victoria Basin Protocol	Art. 4
	1958 Danube Fishing Convention	Art. 7
Radioactive atmospheric pollution	1963 Test Ban Treaty	Art. 1(1)
Hostile environmental modification	1977 ENMOD Convention	Art. 1(1)
Migratory species	1979 Bonn Convention	Art. III(4)(b)
Air pollution	1979 LRTAP Convention	Art. 2
Ozone depletion	1985 Vienna Convention	Art. 2(2)(b)
	1987 Montreal Protocol	Preamble
Environmental degradation and pollution	1985 ASEAN Convention	Art. 11
	1986 Noumea Convention	Art. 5(1)
	1991 Espoo Convention	Preamble and Art. 2(1)
	2003 Revised African Nature Convention	Art. 4
	2008 Bucharest Agreement to the 1991 Espoo Convention	Preamble
	2006 Central Asian Sustainable Development Framework Convention	Art. 3
Transboundary impacts	1992 UNECE Transboundary Waters Convention	Art. 2(1) and (2)
	2003 Carpathians Convention	Art. 5(3)(d)
	2006 Central Asian Sustainable Development Framework Convention	Art. 3

TABLE 6.1 (cont.)

Environmental area	Treaty example	Relevant provisions
Fisheries and biodiversity	1995 Fish Stocks Agreement	Art. 5(h)
	2007 West Central Gulf of Guinea Fishery Committee Convention	Preamble
	2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing	Preamble and Art. 1
	2009 Southern Ocean Fishery Resources Convention	Art. 3(1)(iii)
	1992 Biodiversity Convention	Preamble and Arts. 8(h) and 14(1)(d)
	2000 Biosafety Protocol	Art. 2
Chemical pollution	2010 Nagoya Protocol	Arts. 2(2)(d)(i) and 5
	2003 Carpathians Convention	Art. 4(3)
	1998 Chemicals Convention	Preamble and Art. 1
	2001 POPs Convention	Annex C, Part V(B)
	2003 Carpathians Convention	Art. 10(1)
Hazards from wrecks	2009 Ships Recycling Convention	Art. 1
	2007 Wrecks Convention	Preamble and Art. 1(7)
Natural hazards	2003 Carpathians Convention	Arts. 6(a) and 7
	2008 Integrated Coastal Zone Management Protocol	Arts. 5(b) and 6
Climate change	1992 Climate Change Convention	Art. 2
	2015 Paris Agreement	Art. 2

international law and custom, in particular the principles of good-neighbourliness, reciprocity, non-discrimination and good faith', and the procedural rules reflected in the 1997 Watercourses Convention.⁹⁵

The obligation to cooperate is affirmed in virtually all international environmental agreements of bilateral and regional application,⁹⁶ and global instruments.⁹⁷ It also underscores the ICJ's reminder of the need to establish suitable common regimes.⁹⁸ The obligation may be in general terms, relating to the implementation of the treaty's objectives,⁹⁹ or relating to specific commitments under a treaty.¹⁰⁰ The general obligation to cooperate has also been translated into more specific commitments through techniques designed to ensure information sharing and participation in decision-making. These specific commitments, which are considered in more detail in

⁹⁵ Chapter 9, pp. 361–3.

⁹⁶ Early examples include the 1933 London Convention, Art. 12(2); 1940 Western Hemisphere Convention, Art. VI; 1991 Alpine Convention, Art. 2(1).

⁹⁷ Examples include: 1982 UNCLoS, Arts. 123 and 197; 1985 Vienna Convention, Art. 2(2); 1992 Biodiversity Convention, Art. 5.

⁹⁸ See *Case Concerning the Kasikili/Sedudu Island (Botswana/Namibia)* (1999) ICJ Reports 1045, para. 102.

⁹⁹ See e.g. 1968 African Nature Convention, Art. XVI(1); 1992 Biodiversity Convention, Art. 5.

¹⁰⁰ See e.g. 1992 Climate Change Convention, Art. 4(1)(e) (cooperation on preparation for adaptation to the impacts of climate change). See also 2015 Paris Agreement, Art. 7(6) and (7).

subsequent chapters, include: rules on environmental impact assessment (see Chapter 14); rules ensuring that neighbouring states receive necessary information (requiring information exchange, consultation and notification) (see Chapter 15); the provision of emergency information (see Chapter 12); and transboundary enforcement of environmental standards (see Chapter 5). The extent to which these commitments are interrelated is reflected in Principle 7 of the 1978 UNEP Draft Principles, which stated that:

Exchange of information, notification, consultation and other forms of co-operation regarding shared natural resources are carried out on the basis of the principle of good faith and in the spirit of good neighbourliness.

A similar commitment is expressed in Article 4 of the ILC's draft Articles on Prevention of Transboundary Harm (2001).

State practice supporting good neighbourliness and international cooperation is further reflected in the decisions and awards of international courts and tribunals discussed in subsequent chapters, including the *Lac Lanoux* case,¹⁰¹ the *MOX* (Provisional Measures) case, the *Land Reclamation* case between Malaysia and Singapore and the ITLOS *Advisory Opinion on the Sub-regional Fisheries Commission*. The nature and extent of the obligation to cooperate was a central issue in the dispute between Hungary and Slovakia in the *Gabčíkovo–Nagymaros Project* case, at least as originally formulated by Hungary (claiming that Czechoslovakia and then Slovakia had not cooperated in good faith in the implementation of principles affecting transboundary resources, including the obligation to negotiate in good faith and in a spirit of cooperation, to prevent disputes, to provide timely notification of plans to carry out or permit activities which may entail a transboundary interference or a significant risk thereof and to engage in good faith consultations to arrive at an equitable resolution of the situation).¹⁰² However, the ICJ did not address in any detail what the obligation to cooperate entailed, beyond recalling what it had said earlier in the *North Sea Continental Shelf* cases, as well as the principle of good faith which obliged the parties to apply their 1977 treaty 'in a reasonable way and in such a manner that its purpose can be realized'.¹⁰³

The requirements of the obligation to cooperate were at the heart of the *MOX* (Provisional Measures) case. In its application instituting arbitration proceedings under the 1982 UNCLOS, Ireland claimed that the United Kingdom had failed to cooperate as required by Articles 123 and 197 of UNCLOS, for example by failing to reply to communications and requests for information in a timely manner or at all, by withholding environmental information requested by Ireland, and by refusing to prepare a supplementary environmental statement.¹⁰⁴ In its Provisional Measures Order, the ITLOS affirmed that:

¹⁰¹ See pp. 341–2. ¹⁰² Chapter 9, pp. 345–51; Hungary's Original Application, 22 October 1992, paras. 27, 29 and 30.

¹⁰³ (1977) ICJ Reports 78–9, paras. 141–2. In the *North Sea Continental Shelf* cases, the ICJ said: '[The parties] are under an obligation so to conduct themselves that the negotiations are meaningful, which will not be the case when either of them insists upon its own position without contemplating any modification of it' ((1969) ICJ Reports 47, para. 85).

¹⁰⁴ Application, 25 October 2001, para. 33.

the duty to co-operate is a fundamental principle in the prevention of pollution of the marine environment under Part XII of the Convention and general international law and that rights arise therefrom which the Tribunal may consider appropriate to preserve under article 290 of the Convention.

The Tribunal ordered the parties to cooperate and, for that purpose, to enter into consultations forthwith to ‘(a) exchange further information with regard to possible consequences for the Irish Sea arising out of the commissioning of the MOX plant; (b) monitor risks or the effects of the operation of the MOX plant for the Irish Sea; (c) devise, as appropriate, measures to prevent pollution of the marine environment which might result from the operation of the MOX plant’.¹⁰⁵ Two years later, the same approach was applied by the Tribunal in its Provisional Measures Order in the *Land Reclamation* case, when it ordered Malaysia and Singapore to cooperate by entering into consultations to establish a group of independent experts to conduct a study on the effects of Singapore’s land reclamation and to propose measures to deal with any adverse effects, and to exchange information.¹⁰⁶

More recently, ITLOS considered the scope of the obligation to cooperate in its 2015 Advisory Opinion on a *Request submitted by the Sub-regional Fisheries Commission*. One of the questions the Tribunal was requested to address concerned ‘the rights and obligations of the coastal State in ensuring the sustainable management of shared stocks and stocks of common interest, especially the small pelagic species and tuna’.¹⁰⁷ Referring to UNCLOS Article 63(1) (on the management of straddling stocks) and Article 64(1) (dealing with cooperative measures for highly migratory stocks), ITLOS found both

are ‘due diligence’ obligations which require the States concerned to consult with one another in good faith, pursuant to article 300 of the Convention. The consultations should be meaningful in the sense that substantial effort should be made by all States concerned, with a view to adopting effective measures necessary to coordinate and ensure the conservation and development of shared stocks.¹⁰⁸

SUSTAINABLE DEVELOPMENT

Introduction

The general principle that states should ensure the development and use of their natural resources in a manner that is sustainable emerged in the run-up to UNCED. Although the ideas underlying the concept of sustainable development have a long history in international legal instruments, and the term itself began to appear in treaties in the 1980s,

¹⁰⁵ Provisional Measures Order, 3 December 2001, para. 83. The ITLOS order was affirmed by the Annex VII Tribunal by its Order of 24 June 2003, with a recommendation to establish further arrangements to address the Tribunal’s concern that ‘co-operation and consultation may not always have been as timely or effective as it could have been’ (paras. 66–7).

¹⁰⁶ *Land Reclamation* case, Provisional Measures Order, paras. 92 and 106(1).

¹⁰⁷ *Advisory Opinion on Request by Sub-regional Fisheries Commission*, para. 175.

¹⁰⁸ *Ibid.*, para. 210.

the general 'principle of sustainable development' appears to have been first referred to in a treaty in the Preamble to the 1992 EEA Agreement.¹⁰⁹ The term now appears with great regularity in international instruments of an environmental, economic and social character. It has been invoked by various international courts and tribunals, and is established as an international legal concept.¹¹⁰

The term 'sustainable development' is generally considered to have been coined by the 1987 Brundtland Report, which defined it as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. It contains within it two concepts:

- (1) the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
- (2) the idea of limitations imposed, by the state of technology and social organisation, on the environment's ability to meet present and future needs.¹¹¹

State practice, however, suggests that the idea of 'sustainability' has been a feature in international legal relations since at least 1893, when the United States asserted a right to ensure the legitimate and proper use of seals and to protect them, for the benefit of humankind, from wanton destruction.¹¹² Since then, many treaties and other international instruments, as well as decisions of international courts, have supported, directly or indirectly, the concept of sustainable development and the principle that states have the responsibility to ensure the sustainable use of natural resources. Its application has been recognised in relation to all parts of the world.¹¹³

Four recurring elements appear to comprise the legal elements of the concept of 'sustainable development', as reflected in international agreements:

¹⁰⁹ Agreement on the European Economic Area (Oporto), 2 May 1992, in force 1 January 1994; 1801 UNTS 3 (1992 EEA Agreement).

¹¹⁰ See generally the International Law Association's New Delhi Declaration of Principles of International Law Relating to Sustainable Development (2002).

¹¹¹ Report of the World Commission on Environment and Development, *Our Common Future* (1987), 43 (the Brundtland Report).

¹¹² *Pacific Fur Seal* arbitration, Chapter 11, pp. 509–11. Although the arbitral tribunal rejected the argument, it did adopt regulations for the conduct of sealing which incorporated some of the elements of what is now recognised as a 'sustainable' approach to the use of natural resources.

¹¹³ See e.g. Declaration on Establishment of the Arctic Council, 35 ILM 1382 (1996); Yaoundé Declaration on the Conservation and Sustainable Management of Forests, 38 ILM 783 (1999); Agreements on Co-operation for the Sustainable Development of the Mekong River Basin, 34 ILM 864 (1995); Revised Protocol on Shared Watercourses in the Southern African Development Community, 40 ILM 321 (2001); Partnership for Prosperity and Security in the Caribbean, 36 ILM 792 (1997); OECD Guidelines for Multinational Enterprises, Part V, 40 ILM 237 (2001); South East Europe Compact for Reform, Investment, Integrity and Growth, 39 ILM 962 (2000); 2001 Southeast Atlantic Fisheries Convention; 2002 North-East Pacific Convention; 2003 Lake Tanganyika Convention; 2005 Conservation and Sustainable Management of Forest Ecosystems in Central Africa Treaty; 2006 Southern Indian Ocean Fisheries Agreement; 2006 International Tropical Timber Agreement; 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing; 2009 Agreement on the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission; 2011 Protocol on Sustainable Forest Management to the Framework Convention on the Protection and Sustainable Development of the Carpathians (Bratislava) 27 May 2011, in force 21 October 2013, UNEP/CC/COP3; 2011 Protocol on Sustainable Tourism to the Framework Convention on the Protection and Sustainable Development of the Carpathians (Bratislava) 27 May 2011, in force 29 April 2013, UNEP/CC/COP3.

- (1) the need to preserve natural resources for the benefit of future generations (the principle of intergenerational equity);
- (2) the aim of exploiting natural resources in a manner which is 'sustainable', 'prudent', 'rational', 'wise' or 'appropriate' (the principle of sustainable use);
- (3) the 'equitable' use of natural resources, which implies that use by one state must take account of the needs of other states (the principle of equitable use, or intragenerational equity); and
- (4) the need to ensure that environmental considerations are integrated into economic and other development plans, programmes and projects, and that development needs are taken into account in applying environmental objectives (the principle of integration).

These four elements are closely related and often used in combination (and are frequently interchangeably), which suggests that they do not yet have a well-established, or agreed, legal definition or status. The 1989 Lomé Convention indicated how some of the elements of the concept of sustainable development can be brought together in a single legal text. Article 33 of the Convention provided that:

In the framework of this Convention, the protection and the enhancement of the environment and natural resources, the halting of the deterioration of land and forests, the restoration of ecological balances, the preservation of natural resources and their rational exploitation are basic objectives that the [states parties] concerned shall strive to achieve with Community support with a view to bringing an immediate improvement in the living conditions of their populations and to safeguarding those of future generations.

Without referring directly to 'sustainable development', the text introduced into a legal framework the elements identified by the Brundtland Report.¹¹⁴ Recent international instruments have highlighted the interconnection of sustainable development with goals of climate change mitigation and efforts to eradicate poverty. For example, the 2015 Paris Agreement emphasises 'the intrinsic relationship that climate change actions, responses and impacts have with equitable access to sustainable development and eradication of poverty.'¹¹⁵

There can be little doubt that the concept of 'sustainable development' has entered the corpus of international customary law, requiring different streams of international law to be treated in an integrated manner.¹¹⁶ In the *Gabčíkovo–Nagymaros* case, the ICJ invoked the concept in relation to the future regime to be established by the parties. The ICJ said:

¹¹⁴ See also 2000 Cotonou Agreement, Art. 32 ('1. Co-operation on environmental protection and sustainable utilisation and management of natural resources shall aim at: (a) mainstreaming environmental sustainability into all aspects of development co-operation and support programmes and projects implemented by the various actors'). In the 2010 Cotonou Agreement, Art. 32 was replaced by an entirely new version which does not use the term 'sustainability', but instead focuses on climate change: see New 2010 Cotonou Agreement, available at <https://ec.europa.eu/europeaid/node/62718>

¹¹⁵ 2015 Paris Agreement, preamble. See also the 2015 Sustainable Development goals which include ending poverty in all its forms, everywhere (goal 1) and taking urgent action to combat climate change and its impacts (goal 13).

¹¹⁶ See more generally P. Sands, 'International Courts and the Application of the Concept of "Sustainable Development"', 3 *Yearbook of UN Law* 389 (1999).

Throughout the ages, mankind has, for economic and other reasons, constantly interfered with nature. In the past this was often done without consideration of the effects upon the environment. Owing to new scientific insights and to a growing awareness of the risks for mankind – for present and future generations – of pursuit of such interventions at an unconsidered and unabated pace, new norms and standards have been developed [and] set forth in a great number of instruments during the last two decades. Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities, but also when continuing with activities begun in the past. This need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development. For the purposes of the present case, this means that the Parties together should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river.¹¹⁷

By invoking the concept of sustainable development, the ICJ indicated that the term has a legal function and both a procedural/temporal aspect (obliging the parties to ‘look afresh’ at the environmental consequences of the operation of the plant) and a substantive aspect (the obligation of result to ensure that a ‘satisfactory volume of water’ be released from the bypass canal into the main river and its original side arms). The ICJ did not provide further detail as to the practical consequences, although some assistance may be obtained from the Separate Opinion of Judge Weeramantry, who joined in the majority judgment and whose hand guided the drafting of paragraph 140 quoted above.¹¹⁸

In the *Shrimp/Turtle* case, the WTO Appellate Body noted that the Preamble to the WTO Agreement explicitly acknowledges ‘the objective of sustainable development’, and characterised it as a concept that ‘has been generally accepted as integrating economic and social development and environmental protection’.¹¹⁹ The concept informed the Appellate Body’s conclusion that sea turtles are an ‘exhaustible natural resource’ (within the meaning of Article XX(g) of the GATT) and that they had a sufficient nexus with the United States to justify the latter state’s conservation measures, at least in principle. The Appellate Body also invoked ‘sustainable development’ in assessing whether the US measures had been applied in a discriminatory

¹¹⁷ (1997) ICJ Reports 78, para. 140; cited with approval in *Iron Rhine* case, para. 59; see also the *Pulp Mills* case, paras. 75, 76, 177 and 185 and *Indus Waters Arbitration*, Partial Award, para. 452. In its Final Award, however, the *Indus Waters* arbitral tribunal sought to distinguish the finding ‘that principles of international environmental law must be taken into account even when interpreting treaties concluded before the development of that body of law’, on the basis that the *Indus Waters* treaty at issue expressly limited ‘the extent to which the Court may have recourse to, and apply, sources of law beyond the Treaty itself’ (para. 111).

¹¹⁸ (1997) ICJ Reports 92 (‘It is thus the correct formulation of the right to development that that right does not exist in the absolute sense, but is relative always to its tolerance by the environment. The right to development as thus refined is clearly part of modern international law. It is compendiously referred to as sustainable development’).

¹¹⁹ 38 ILM 121 (1999), para. 129. This view was supported by reference to numerous international conventions: para. 130, citing Art. 56(1)(a) of the 1982 UNCLoS. See also the Opinion of Advocate General Léger in Case C-371/98, *R. v. Secretary of State for the Environment, Transport and the Regions, ex parte First Corporate Shipping Ltd* [2000] ECR I-9235, who noted that sustainable development ‘emphasises the necessary balance between various interests which sometimes clash, but which must be reconciled’ (relying upon the Preamble to the 1992 Habitats Directive, which refers to sustainable development (discussed in D. McGillivray and J. Holder, ‘Locating EC Environmental Law’, 20 *Yearbook of European Law* 139 at 151 (2001))).

fashion. In this regard, it referred to 'sustainable development' in the Preamble to the WTO Agreement as adding:

color, texture and shading to our interpretation of the agreements annexed to the WTO Agreement, in this case the GATT 1994. We have already observed that Article XX(g) of the GATT 1994 is appropriately read with the perspective embodied in the above preamble.¹²⁰

Future Generations¹²¹

The idea that, as 'members of the present generation, we hold the earth in trust for future generations'¹²² is well known to international law, having been relied upon as early as 1893 by the United States in the *Pacific Fur Seal* arbitration. It is also expressly or implicitly referred to in many of the early environmental treaties, including the 1946 International Whaling Convention,¹²³ the 1968 African Nature Convention¹²⁴ and the 1972 World Heritage Convention.¹²⁵ Other, more recent, treaties have sought to preserve particular natural resources and other environmental assets for the benefit of present and future generations. These include wild flora and fauna;¹²⁶ the marine environment;¹²⁷ essential renewable natural resources;¹²⁸ the environment generally;¹²⁹ the resources of the Earth,¹³⁰ natural heritage,¹³¹ natural resources;¹³² water resources;¹³³ biological diversity;¹³⁴ and the climate system.¹³⁵

International declarations often make reference to intergenerational equity as an important aspect of the concept of sustainable development. According to Principle 1 of the 1972 Stockholm Declaration, man bears 'a solemn responsibility to protect and improve the environment for present and future generations', and UN General Assembly Resolution 35/8, adopted in 1980,

¹²⁰ 38 ILM 121 (1999), para. 153.

¹²¹ E. Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony and Intergenerational Equity* (1989); A. D'Amato, 'Do We Owe a Duty to Future Generations to Preserve the Global Environment?', 84 *American Journal of International Law* 190 (1990); L. Gundling, 'Our Responsibility to Future Generations', 84 *American Journal of International Law* 207 (1990); E. Agius and S. Busuttill, *Future Generations and International Law* (1998); E. Louka, *International Environmental Law: Fairness, Effectiveness and World Order* (2006); E. Brown Weiss, 'Climate Change, Intergenerational Equity, and International Law', 9 *Vermont Journal of Environmental Law* 615 (2008); E. Brown Weiss, 'Implementing Intergenerational Equity', in Fitzmaurice et al., *Research Handbook on International Environmental Law*, 100.

¹²² E. Brown Weiss, 'Our Rights and Obligations to Future Generations for the Environment', 84 *American Journal of International Law* 198 at 199 (1990).

¹²³ The Preamble recognises the 'interest of the nations of the world in safeguarding for future generations the great nature resources represented by the whale stocks'.

¹²⁴ The Preamble provides that natural resources should be conserved, utilised and developed 'by establishing and maintaining their rational utilisation for the present and future welfare of mankind'.

¹²⁵ Under Art. 4, the parties agree to protect, conserve, present and transmit cultural and natural heritage to 'future generations'.

¹²⁶ 1973 CITES, Preamble.

¹²⁷ 1978 Kuwait Convention, Preamble; 1983 Cartagena de Indias Protocol, Preamble; 1982 Jeddah Convention, Art. 1(1).

¹²⁸ 1976 South Pacific Nature Convention, Preamble. ¹²⁹ 1977 ENMOD Convention, Preamble.

¹³⁰ 1979 Bonn Convention, Preamble. ¹³¹ 1985 Nairobi Convention, Preamble.

¹³² 1985 ASEAN Convention, Preamble. ¹³³ 1992 Transboundary Waters Convention, Art. 2(5)(c).

¹³⁴ 1992 Biodiversity Convention, Preamble.

¹³⁵ 1992 Climate Change Convention, Art. 3(1); 2015 Paris Agreement, Preamble (referencing intergenerational equity).

affirmed that the responsibility to present and future generations is a historic one for the 'preservation of nature'. The Rio Declaration associates intergenerational equity with the right to development, providing in Principle 4 that the 'right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations'.

In its Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*, the ICJ recognised that 'the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn'.¹³⁶ The purpose of the ICJ's reliance on the intergenerational equity concept is not immediately apparent, and it is sometimes said that the undertakings in favour of future generations have limited practical legal consequences. They are considered by some to be closely associated with the civil and political aspects of the relationship between environmental protection and human rights protection.¹³⁷ According to this view, the rights of future generations might be used to enhance the legal standing of members of the present generation to bring claims, in cases relying upon substantive rules of environmental treaties where doubt exists as to whether a particular treaty creates rights and obligations enforceable by individuals.¹³⁸

Sustainable Use of Natural Resources

A second approach, reflected in treaties adopting a 'sustainable' approach, is to focus on the adoption of standards governing the rate of use or exploitation of specific natural resources rather than on their preservation for future generations. Particularly for marine living resources, a standard approach has emerged requiring exploitation to be conducted at levels that are 'sustainable' or 'optimal'.¹³⁹ The failure of the 1946 International Whaling Convention to prevent the depletion of many whale species can be measured by reference to its stated objective of achieving 'the optimum level of whale stocks' and confining whaling operations 'to those species best able to sustain exploitation in order to give an interval for recovery to certain species of whales now depleted in numbers'.¹⁴⁰ Similar commitments to limit catches or productivity to 'maximum sustained' levels have been agreed for other marine species, such as tuna,¹⁴¹ North Pacific fish,¹⁴² Pacific fur seals,¹⁴³ and living resources in the EEZ.¹⁴⁴ Other treaties limit catches to 'optimum sustainable yields', or subject them to a required standard of 'optimum utilisation'; this applies, for example, in relation to Antarctic seals,¹⁴⁵ high seas fisheries¹⁴⁶ and some highly migratory species.¹⁴⁷

In its 2015 Advisory Opinion in response to a *Request by the Sub-Regional Fisheries Commission*, ITLOS considered the meaning of the concept of 'sustainable management' in the context of

¹³⁶ (1996) ICJ Reports 226. See also *Gabčíkovo–Nagymaros* case (1997) ICJ Reports 7, para. 53; see also *Iron Rhine* case, para. 58.

¹³⁷ See generally Chapter 17, pp. 819–27. ¹³⁸ See Chapter 5, pp. 155–60, on the standing issue.

¹³⁹ See e.g. 1995 Fish Stocks Agreement, Art. 2. ¹⁴⁰ Preamble; see also Art. V(2).

¹⁴¹ 1949 Tuna Convention, Preamble; 1966 Atlantic Tuna Convention, Art. IV(2)(b).

¹⁴² 1952 North Pacific Fisheries Convention, Preamble and Art. IV(1)(b)(ii).

¹⁴³ 1976 Pacific Fur Seals Convention, Preamble and Arts. II(1)(a), V(2)(d) and XI.

¹⁴⁴ 1982 UNCLOS, Art. 61(3). See also 1995 Fish Stocks Agreement. ¹⁴⁵ 1972 Antarctic Seals Convention, Preamble.

¹⁴⁶ 1958 High Seas Fishing and Conservation Convention, which defines conservation as 'the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products' (Art. 2).

¹⁴⁷ 1982 UNCLOS, Art. 64(1).

straddling and migratory fish stocks. Drawing on Article 61 of UNCLOS concerning the conservation of living resources in coastal states' exclusive economic zones, the Tribunal observed that 'the ultimate goal of sustainable management of fish stocks is to conserve and develop them as a viable and sustainable resource'.¹⁴⁸ ITLOS therefore construed the term 'sustainable management' as meaning 'conservation and development' as referred to in Article 63(1) of UNCLOS.

Sustainable use is a concept also applicable to non-marine resources. The 1968 African Nature Convention provides that the utilisation of all natural resources 'must aim at satisfying the needs of man according to the carrying capacity of the environment',¹⁴⁹ and the 1983 International Tropical Timber Agreement encouraged 'sustainable utilisation and conservation of tropical forests and their genetic resources',¹⁵⁰ a notion that remains at the heart of the 2006 version of the Agreement.¹⁵¹ The 1985 ASEAN Agreement was one of the first treaties to require parties to adopt a standard of 'sustainable utilisation of harvested natural resources . . . with a view to attaining the goal of sustainable development'.¹⁵² Further support for sustainable use or management as a legal term may be found in the 1987 Zambezi Action Plan Agreement,¹⁵³ the 1992 Climate Change Convention,¹⁵⁴ the 1992 Biodiversity Convention¹⁵⁵ and its 2000 Biosafety¹⁵⁶ and 2010 Nagoya Protocols,¹⁵⁷ and the 1992 OSPAR Convention.¹⁵⁸ The fact that so many species and natural resources are in fact not sustainably managed illustrates the difficulty in translating the concept of sustainable development into a practical conservation tool.

The term sustainable development also appears frequently in instruments relating to international economic law and policy. Under its Articles of Agreement, the European Bank for Reconstruction and Development must 'promote in the full range of its activities environmentally sound and sustainable development'.¹⁵⁹ The Preamble to the 1994 WTO Agreement commits parties to 'the optimal use of the world's resources in accordance with the objective of sustainable development'.¹⁶⁰

Other acts of the international community have also relied upon the concept of 'sustainable development', or the spirit that underlies it, without specifying what, precisely, it means. Although the 1972 Stockholm Declaration did not endorse 'sustainable development', it did call for the non-exhaustion of renewable natural resources and the maintenance and improvement of 'the capacity of the earth to produce vital renewable resources'.¹⁶¹ The 1982 World Charter for Nature stated that resources which are utilised are to be managed so as to 'achieve and maintain optimum sustainable productivity', and provided that living resources must not be utilised 'in excess of their natural capacity for regeneration'.¹⁶² The 1992 Rio Declaration went further than most instruments by expressly defining the content of the concept of sustainable development,

¹⁴⁸ SFRC Advisory Opinion, para. 190. ¹⁴⁹ Preamble. ¹⁵⁰ Art. 1(h).

¹⁵¹ 2006 International Tropical Timber Agreement, Art. 1(m).

¹⁵² Art. 1(1); see also Art. 9 on the protection of air quality, and Art. 12(1) in respect of land use, which is to be based 'as far as possible on the ecological capacity of the land'.

¹⁵³ Preamble. ¹⁵⁴ Art. 3(4).

¹⁵⁵ Preamble and Arts. 1, 8, 11, 12, 16, 17 and 18. The Convention defines 'sustainable use' as 'the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations' (Art. 2).

¹⁵⁶ Art. 1. ¹⁵⁷ 2010 Nagoya Protocol, Preamble, Arts. 8(a), 9, 10 and 22(5)(h), and Annex, paras. 1(f), 2(f) and (k).

¹⁵⁸ Preamble. The Convention defines 'sustainable management' as the 'management of human activities in such a manner that the marine ecosystem will continue to sustain the legitimate uses of the sea and will continue to meet the needs of present and future generations' (Art. 1).

¹⁵⁹ Art. 2(1)(vii). ¹⁶⁰ On the *Shrimp/Turtle* case, see pp. 859–65. ¹⁶¹ Principles 3 and 5.

¹⁶² Paras. 4 and 10(a).

and actively calling for the ‘further development of international law in the field of sustainable development’, which suggested that international law in this field already existed.¹⁶³ Apart from the environmental component of ‘sustainable development’, the Rio Declaration linked environmental issues to matters which were previously considered as belonging to the realm of economic and development law, an approach emphasised by the 2015 Sustainable Development Goals. These issues, increasingly considered for their environmental implications, include the eradication of poverty, the special responsibility of developed countries, the reduction and elimination of unsustainable patterns of production and consumption, the promotion of appropriate population policies, and a supportive and open international economic system.¹⁶⁴

Treaties and other international acts have also supported the development of the concept of ‘sustainable use’ through the use of terms which are closely related; international legal instruments have aimed for conservation measures and programmes which are ‘rational’, or ‘wise’, or ‘sound’, or ‘appropriate’, or a combination of the above. In some instruments, the preferred objective is the ‘conservation’ of natural resources, which has been subsequently defined by reference to one or more of the terms identified above. Moreover, the term ‘conservation’ itself includes elements similar to ‘sustainable development’. The Legal Experts Group of the World Commission on Environment and Development defined ‘conservation’ in terms that recall the principle of sustainable development as:

[the] management of human use of a natural resource or the environment in such a manner that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. It embraces preservation, maintenance, sustainable utilisation, restoration and enhancement of a natural resource or the environment.¹⁶⁵

‘Rational’, ‘wise’, ‘sound’ and ‘appropriate’ use are usually used without definition and often interchangeably, and accordingly the meaning of each term will depend upon its application in each instrument. Although attempts at definition have been made, no generally accepted definitions exist, and it is unlikely that distinguishable legal definitions could be agreed. The use of various terms in a single instrument is illustrated by the 1982 UNCLOS: it requires conservation at ‘maximum sustainable yield’ for the living resources of the territorial and high seas, the ‘optimum utilisation’ of the living resources found in the EEZ, and the ‘rational management’ of the resources in the ‘Area’ in accordance with ‘sound principles of conservation’.¹⁶⁶

‘Rational’ utilisation and management are the governing standard for migratory birds,¹⁶⁷ fisheries,¹⁶⁸ salmon,¹⁶⁹ all natural resources,¹⁷⁰ seals¹⁷¹ and hydro resources.¹⁷² They are the

¹⁶³ Principle 27. ¹⁶⁴ Principles 5, 7, 8 and 12. See also Sustainable Development Goals, 1 and 12.

¹⁶⁵ 1986 WCED Legal Principles, para. (i). ¹⁶⁶ Preamble and Arts. 61(3), 62(1), 119(1)(a) and 150(b).

¹⁶⁷ 1940 Western Hemisphere Convention, Art. VII.

¹⁶⁸ 1958 Danube Fishing Convention, Preamble and Art. VIII; 1959 North-East Atlantic Fisheries Convention, Preamble and Art. V(1)(b); 1959 Black Sea Fishing Convention, Preamble and Arts. 1 and 7; 1969 Southeast Atlantic Fisheries Convention, Preamble; 1973 Baltic Fishing Convention, Arts. I and X(h); 1978 Northwest Atlantic Fisheries Convention, Art. II(1).

¹⁶⁹ 1982 North Atlantic Salmon Convention, Preamble.

¹⁷⁰ 1968 African Nature Convention, Art. II; 1978 Amazonian Treaty, Arts. I and VII.

¹⁷¹ 1972 Antarctic Seals Convention, Art. 3(1); 1976 North Pacific Fur Seals Convention, Art. II(2)(g).

¹⁷² 1978 Amazonian Treaty, Art. V.

required standard called for by Principles 13 and 14 of the Stockholm Declaration, and the 1980 CCAMLR defines 'conservation' objectives as including 'rational use',¹⁷³ as does the 1982 Jeddah Regional Seas Convention.¹⁷⁴ 'Proper' utilisation and management has been adopted as a governing standard for fisheries¹⁷⁵ and forests.¹⁷⁶ 'Wise use' has been endorsed for flora and fauna,¹⁷⁷ wetlands¹⁷⁸ and natural resources generally.¹⁷⁹ Other standards introduced by international agreements include 'judicious exploitation',¹⁸⁰ 'sound environmental management',¹⁸¹ 'appropriate environmental management'¹⁸² and 'ecologically sound and rational' use of natural resources.¹⁸³

The significance of these terms is that each recognises limits placed by international law on the rate of use or manner of exploitation of natural resources, including those that are shared or are in areas beyond national jurisdiction. These standards cannot have an absolute meaning. Rather, their interpretation is, or should be, implemented by states acting cooperatively, or by decisions of international organisations, or, ultimately, by international judicial bodies in the event that a dispute arises.

Equitable Use of Natural Resources

Equity and equitable principles are terms frequently relied upon in international environmental texts.¹⁸⁴ In the absence of detailed rules, equity can provide a conveniently flexible means of leaving the extent of rights and obligations to be decided at a subsequent date, which may explain its frequent usage at UNCED. In many respects, UNCED was about equity: how to allocate future responsibilities for environmental protection between states at different levels of economic development, which have contributed in different degrees to particular problems, and which have different environmental and developmental needs and priorities. This was reflected in each UNCED instrument, which sought to apply equity to particular issues.

¹⁷³ Art. II(1) and (2). 'Principles of conservation' are defined as (a) the 'prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment', and (b) the 'maintenance of ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to levels' above (a), and the 'prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades . . . with the aim of making possible the sustained conservation of Antarctic marine living resources' (Art. II(3)).

¹⁷⁴ Art. 1(1), including reference to present and future generations, optimum benefit, and conservation, protection, maintenance, sustainable and renewable utilisation, and enhancement of the environment.

¹⁷⁵ 1949 Agreement for the General Fisheries Council for Mediterranean, Preamble and Art. IV(a).

¹⁷⁶ 1959 Agreement for the Latin American Forest Institute, Art. III(1)(a).

¹⁷⁷ 1968 African Nature Convention, Art. VII(1); 1972 Stockholm Declaration, Principle 4; 1976 South Pacific Nature Convention, Art. V(1).

¹⁷⁸ 1971 Ramsar Wetlands Convention, Arts. 2(6) and 6(2)(d). ¹⁷⁹ 1979 Bonn Convention, Preamble.

¹⁸⁰ 1963 Niger Basin Act, Preamble.

¹⁸¹ 1981 Abidjan Convention, Arts. 4(1) and 14(3); 1983 Cartagena de Indias Convention, Art. 4(1); 1985 Nairobi Convention, Art. 4(1); 1989 Basel Convention, Preamble and Arts. 2(8), 4(2)(b) and (8), 6(3)(b), 10 and 11; 1989 Waigani Convention, Arts. 1, 4(4)(c), 6(3)(d), 8(2), 10 and 11(1).

¹⁸² 1981 Lima Convention, Art. 3(1). ¹⁸³ 1992 UNECE Transboundary Waters Convention, Art. 2(2)(b).

¹⁸⁴ G. Handl, 'The Principle of Equitable Use as Applied to Internationally Shared Natural Resources: Its Role in Resolving Potential International Disputes Over Transfrontier Pollution', 14 *RBDI* 40 (1977-8); L. F. E. Goldie, 'Equity and the International Management of Transboundary Resources', 25 *Natural Resources Journal* 665 (1985); J. Lammers, "'Balancing the Equities" in International Environmental Law', in R. J. Dupuy (ed.), *L'Avenir du Droit International de l'Environnement* (Dordrecht: Martinus Nijhoff, 1985), 153; P. B. Cheng-Kang, 'Equity, Special Considerations and the Third World', 1 *Colorado Journal of International Environmental Law and Policy* 57 (1990); L. Rajamani, *Differential Treatment in International Environmental Law* (Oxford: Oxford University Press, 2006).

Principle 3 of the Rio Declaration invoked the ‘right of development’ as a means of ‘equitably’ meeting the developmental and environmental needs of future generations. Under the Climate Change Convention, all the parties undertook to be guided on ‘the basis of equity’ in their actions to achieve the objective of the Convention, and Annex I parties agreed to take into account the need for ‘equitable and appropriate contributions’ by each of them to the global effort regarding the achievement of the objective of the Convention.¹⁸⁵ The objectives of the 1992 Biodiversity Convention include the ‘fair and equitable’ sharing of the benefits arising out of the use of genetic resources.¹⁸⁶

The application of equity in international environmental affairs pre-dates UNCED, having been associated with the protection of the environment for the benefit of future generations (intergenerational equity);¹⁸⁷ the principle of common but differentiated responsibility which takes into account the needs and capabilities of different countries and their historic contribution to particular problems;¹⁸⁸ and the allocation of shared natural resources,¹⁸⁹ shared fisheries stocks¹⁹⁰ or shared freshwater resources.¹⁹¹ Equity has also been relied upon in relation to the participation of states in environmental organisations,¹⁹² financial and other contributions to activities,¹⁹³ and the equitable distribution of the benefits of development.¹⁹⁴

It is, however, in relation to the allocation of shared natural resources that equity is likely to play its most important role, as underscored by the ICJ’s ruling in the *Gabčíkovo–Nagymaros* case that Czechoslovakia violated international law by unilaterally assuming control of a shared resource and depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube.¹⁹⁵ In the *Pulp Mills* case, the ICJ confirmed that utilisation of a river would not be equitable and reasonable ‘if the interests of the other riparian State in the shared resource and the environmental protection of the latter were not taken into account’.¹⁹⁶

In respect of state practice reflected in treaty provisions, the Preamble to the 1987 Montreal Protocol reflects the aim of controlling ‘equitably total global emissions of substances that deplete the ozone layer’, an aim translated into specific obligations through the process of intergovernmental negotiations (as reflected in the various Adjustments and Amendments to the 1987 Montreal Protocol).¹⁹⁷ The 1992 Climate Change Convention requires the equitable allocation of emission rights, although many would question whether this was in fact achieved by the targets for emission reduction agreed in the 1997 Kyoto Protocol.¹⁹⁸ The 2015 Paris Agreement also refers to the need for implementation of the Agreement to ‘reflect equity’, although no indication is given as to the considerations that are to be taken into account as

¹⁸⁵ Arts. 3(1) and 4(2)(a). ¹⁸⁶ Arts. 1 and 15(7). See Chapter 10, pp. 388–9. ¹⁸⁷ See pp. 221–2

¹⁸⁸ See pp. 244–7. ¹⁸⁹ See the 1978 UNEP Draft Principles, Principle 1.

¹⁹⁰ *Fisheries Jurisdiction* case, Chapter 11, p. 512–13. ¹⁹¹ Chapter 9, pp. 339ff.

¹⁹² Examples include: 1992 Oil Pollution Fund Convention, Art. 22(2)(a) (equitable geographic distribution of membership on Executive Committee); 1972 World Heritage Convention, Art. 8(2) (‘equitable representation of the different regions and cultures of the world’ on the World Heritage Committee); 1982 UNCLOS, Art. 161(1)(c) (equitable geographic distribution of membership of the Council of the International Seabed Authority).

¹⁹³ See e.g. 1973 Baltic Sea Fishing Convention, Art. I.

¹⁹⁴ 1978 Amazonian Treaty, Preamble. The 2015 Paris Agreement preamble emphasises ‘the intrinsic relationship that climate change actions, responses and impacts have with equitable access to sustainable development and eradication of poverty.’

¹⁹⁵ (1997) ICJ Reports 7 at 56; Chapter 9, pp. 345–51. ¹⁹⁶ *Pulp Mills* case, para. 177.

¹⁹⁷ See Chapter 7, pp. 280–2.

¹⁹⁸ Annex B. Questions over each country’s ‘equitable share’ of the global burden of reducing greenhouse gas emissions remain a point of great contention in the current international climate change negotiations.

constituting 'equity'.¹⁹⁹ The 1992 Biodiversity Convention requires the determination of what constitutes an equitable sharing of the benefits arising out of the use of genetic resources. The 2010 Nagoya Protocol to the Biodiversity Convention establishes a regime for this purpose, but without clarifying what 'fair and equitable sharing' entails, other than that such sharing shall be 'upon mutually agreed terms'.²⁰⁰ Consequently, in each of these cases, the factors to be taken into account in establishing specific rights and obligations must be determined in the circumstances of each instrument, including its provisions, the context of its negotiation and adoption, and subsequent practice by the organs it establishes and by parties.

Integration of Environment and Development

A fourth element of 'sustainable development' is the commitment to integrate environmental considerations into economic and other development, and to take into account the needs of economic and other social development in crafting, applying and interpreting environmental obligations. The arbitral tribunal in the *Iron Rhine* case confirmed that the integration of appropriate environmental measures in the design and implementation of economic development activities is a requirement of international law.²⁰¹ In many ways, this element of sustainable development is the most important and the most legalistic: its formal application requires the collection and dissemination of environmental information, and the conduct of environmental impact assessments.²⁰² The integration approach may also serve as the basis for allowing, or requiring, 'green conditionality' in bilateral and multilateral development assistance,²⁰³ and the adoption of differentiated legal commitments on the basis of the historic responsibility of states (including the resulting economic benefits) and their capacity to respond to environmental requirements.²⁰⁴

The integration of environment and development began prior to the 1972 Stockholm Conference. Linkage between conservation and development was made at the United Nations Conference on the Conservation and Utilisation of Resources (UNCCUR) in 1949.²⁰⁵ In 1971, the General Assembly expressed its conviction that 'development plans should be compatible with a sound ecology and that adequate environmental conditions can best be ensured by the promotion of development, both at the national and international levels'.²⁰⁶ Principle 13 of the Stockholm Declaration called on states to adopt 'an integrated and coordinated approach to their development planning so as to ensure that their development is compatible with the need to protect and improve the human environment'. The 1982 World Charter for Nature provided that the conservation of nature was to be taken into account in the planning and implementation of economic and social development activities and that due account was to be taken of the long-term capacity of natural systems in formulating plans for economic development.²⁰⁷

¹⁹⁹ 2015 Paris Agreement, Art. 2(2) ²⁰⁰ Art. 5(1). ²⁰¹ *Iron Rhine* case, paras. 59 and 243.

²⁰² See e.g. its application by the ICJ in the *Gabčíkovo-Nagymaros* case, p. 678. See generally Chapters 14 and 15.

²⁰³ See *R. v. Secretary of State for Foreign Affairs, ex parte World Development Movement Ltd* [1995] 1 All ER 611 (judgment declaring unlawful a decision of the UK Foreign Secretary to provide finance for the construction of the Pergau dam in Malaysia, on the ground that the grant of aid was so economically unsound that it violated section 1 of the Overseas Development Co-operation Act 1980). The Environmental Procedures of the United States Agency for International Development have generated controversy by tying the grant of development assistance by the United States to compliance with its national environmental laws, including in relation to assistance channelled through the multilateral development banks and other funds.

²⁰⁴ See pp. 244-7. ²⁰⁵ Chapter 2, pp. 26-7. ²⁰⁶ UNGA Res. 2849 (XXVI) (1971). ²⁰⁷ Paras. 7 and 8.

Numerous regional treaties were also adopted that support an approach that integrates environment and development. Examples include: the 1974 Paris Convention, which called for an 'integrated planning policy consistent with the requirement of environmental protection';²⁰⁸ the 1978 Kuwait Convention, which supported an 'integrated management approach ... which will allow the achievement of environmental and development goals in a harmonious manner';²⁰⁹ the 1978 Amazonian Treaty, which affirmed the need to 'maintain a balance between economic growth and conservation of the environment';²¹⁰ and the 1985 ASEAN Convention, which sought to ensure that 'conservation and management of natural resources are treated as an integral part of development planning at all stages and at all levels'.²¹¹

For many years, however, the international regulation of environmental issues took place exclusively in international fora, such as UNEP and the Conferences of the Parties to environmental treaties, which were not directly connected to international economic organisations, particularly the World Bank and the GATT/WTO. One consequence was a divergence in approaches. This is a constitutional problem, which appears also in the organisation of national governments. The constituent instruments which originally created the UN and its specialised agencies, and in particular the GATT/WTO, the World Bank, the multilateral development banks and regional economic integration organisations, did not address environmental protection requirements or the need to ensure that development was environmentally sustainable. Environmental concerns were historically addressed on the margins of international economic concerns, and it is only since UNCED that the relationship between environmental protection and economic development has been more fully recognised by the international community. The UNCED process and subsequent developments such as the 2015 Sustainable Development Goals reflect the need to integrate environment and development, such that the two objectives are now inextricably integrated.

Principle 4 of the Rio Declaration provides that: 'In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.'²¹² An integrated approach to environment and development has significant practical consequences, most notably, that environmental considerations have become a feature of international economic policy and law (and that lawyers working in the area of environmental protection need to familiarise themselves with economic law and concepts). This is borne out by the changes that have taken place since the late 1980s. Examples include: the establishment of an Environment Department at the World Bank and the adoption of environmental assessment and related requirements; the convergence of trade with environment at the GATT and then the WTO; the elaboration of language on sustainable development in the Articles of Agreement of the EBRD and the WTO; and the development of environmental jurisprudence in competition, subsidy, foreign investment and intellectual property law.²¹³

The integration of environment and development, advocated by the global instruments adopted at UNCED, and treaties adopted subsequently,²¹⁴ reopened debate over the 'right to development', after efforts to establish a New International Economic Order in the mid 1970s met

²⁰⁸ Art. 6(2)(d). ²⁰⁹ Preamble. ²¹⁰ *Ibid.* ²¹¹ Art. 2(1). ²¹² Invoked in the *Iron Rhine* case, para. 59.

²¹³ See further Chapter 18, pp. 894ff.

²¹⁴ 1992 Biodiversity Convention, Art. 6(b); 1992 Climate Change Convention, Preamble; 2000 Cotonou Agreement, Art. 32 (requiring the 'mainstreaming' of environmental sustainability throughout development cooperation).

with opposition from some of the larger industrialised countries. Principle 3 of the Rio Declaration implicitly accepts the ‘right to development’, although the United States declared that it did not, by joining consensus on the Rio Declaration, change its long-standing opposition to the ‘so-called “right to development”’. For the United States, development ‘is not a right . . . [it] is a goal we all hold’, and the US disassociated itself from any interpretation of Principle 3 that accepted a ‘right to development’.²¹⁵ Developing countries have, in this context, been careful to introduce language into treaties to safeguard their future development and limit the extent to which international environmental regulation might limit such development. Both UNCED treaties include language to the effect that the overriding priority needs of developing countries are the achievement of economic growth and the eradication of poverty,²¹⁶ an objective given more concrete expression by making the effective implementation by developing countries of their commitments dependent upon the effective implementation by developed countries of their financial obligations. Despite the US language, Principle 3 of the Rio Declaration, with which Principle 4 must be read to be fully understood, was part of the bargain struck between developed and developing countries, which is also evident in the convoluted language of Article 3(4) of the Climate Change Convention. This provides that the parties ‘have a right to and should, promote sustainable development’, which reflects a compromise text between those states which sought an express recognition of a ‘right to development’ and those states which sought to dilute such a right by recognising only a ‘right to promote sustainable development’. The 2015 Paris Agreement, however, is more equivocal; while parties are exhorted in the preamble to respect human rights including ‘the right to development’, the substantive provisions refer only to climate action ‘in the context of sustainable development and efforts to eradicate poverty’.²¹⁷

Conclusion

International law recognises a principle (or concept) of ‘sustainable development’. The term needs to be taken, in the context of its historic evolution, as reflecting a range of procedural and substantive commitments and obligations. These are primarily, but not exclusively, recognition of:

- the need to take into consideration the needs of present and future generations;
- the acceptance, on environmental protection grounds, of limits placed upon the use and exploitation of natural resources;
- the role of equitable principles in the allocation of rights and obligations;
- the need to integrate all aspects of environment and development; and
- the need to interpret and apply rules of international law in an integrated and systemic manner.

PRECAUTIONARY PRINCIPLE

Whereas the preventive principle and elements of the sustainable development concept can be traced back to international environmental treaties and other international acts since at least the

²¹⁵ UNCED Report, vol. II, 17; UN Doc. A/CONF.151/26/Rev.1 (vol. II) (1993).

²¹⁶ 1992 Climate Change Convention, Preamble; 1992 Biodiversity Convention, Preamble.

²¹⁷ 2015 Paris Agreement, Art. 2(1).

1930s, the precautionary principle only began to appear in international legal instruments in the mid 1980s, although prior to then it had featured as a principle in domestic legal systems, most notably that of West Germany.²¹⁸ The precautionary principle aims to provide guidance in the development and application of international environmental law where there is scientific uncertainty. It continues to generate disagreement as to its meaning and effect, as reflected in particular in the views of states and international judicial practice. On the one hand, some consider that it provides the basis for early international legal action to address highly threatening environmental issues.²¹⁹ On the other hand, its opponents have decried the potential that the principle has for over-regulation and limiting human activity. The core of the principle is reflected in Principle 15 of the Rio Declaration, which provides that:

Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.²²⁰

Principle 15 also provides that ‘the precautionary approach shall be widely applied by states according to their capabilities’.

The precautionary principle (or precautionary approach, as the US and some others prefer to call it) has been adopted in many international environmental treaties since 1989. Although its precise formulation is not identical in each instrument, the language of Principle 15 of the Rio Declaration attracts broad support. The principle finds its roots in the more traditional environmental agreements that call on parties to such agreements, and the institutions they create, to act and to adopt decisions that are based upon ‘scientific findings’ or methods,²²¹ or ‘in the light of knowledge available at the time’.²²² These standards suggest that action shall only be taken where there is scientific evidence that significant environmental damage is occurring, and that in the absence of such evidence no action would be required. Examples of a traditional approach include the 1974 Paris Convention, which allowed parties to take additional measures ‘if scientific evidence has established that a serious hazard may be created in the maritime area by that substance and if urgent action is necessary’.²²³ This required the party wishing to adopt measures to ‘prove’ a case for action based upon the existence of sufficient scientific evidence, which was often difficult to obtain.

The 1969 Intervention Convention was one of the earliest treaties to recognise the limitations of the traditional approach, concerning the environmental consequences of a failure to act. It allows proportionate measures to be taken to prevent, mitigate or eliminate grave and imminent

²¹⁸ K. von Moltke, ‘The Vorsorgeprinzip in West German Environmental Policy’, in *Twelfth Report* (Royal Commission on Environmental Pollution, UK, HMSO, Cm 310, 1988), 57.

²¹⁹ See e.g. the support for the precautionary principle by low-lying AOSIS countries in the climate change negotiations, put as follows: ‘For us the precautionary principle is much more than a semantic or theoretical exercise. It is an ecological and moral imperative. We trust the world understands our concerns by now. We do not have the luxury of waiting for conclusive proof, as some have suggested in the past. The proof, we fear, will kill us’ (Ambassador Robert van Lierop, Permanent Representative of Vanuatu to the UN and Co-Chairman of Working Group 1 of the INC/FCCC, Statement to the Plenary Session of the INC/FCCC, 5 February 1991, at 3).

²²⁰ See also WSSD Plan of Implementation, paras. 22 and 103.

²²¹ 1946 International Whaling Convention, Art. V(2); 1972 Antarctic Seals Convention, Annex, para. 7(b); 1972 World Heritage Convention, Preamble; 1972 London Convention, Art. XV(2); 1979 Bonn Convention, Arts. III(2) and XI(3) (action on the basis of ‘reliable evidence, including the best scientific evidence available’).

²²² 1960 Radiation Convention, Art. 3(1). ²²³ Art. 4(4).

danger to coastlines from the threat of oil pollution, taking account of 'the extent and probability of imminent damage if those measures are not taken'.²²⁴ Developments in the mid 1980s to address ozone depletion reflected growing support for precautionary action. The first treaty to refer to the term was the 1985 Vienna Convention, which reflected the parties' recognition of the 'precautionary measures' taken at the national and international levels.²²⁵ By 1987, the parties to the Montreal Protocol noted the 'precautionary measures' to control emissions from certain CFCs which had already been taken at the national and regional levels and stated the determination to 'protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it'.²²⁶

The precautionary principle has been relied upon in relation to measures to protect a range of other environmental media, especially the marine environment. The Preamble to the 1984 Ministerial Declaration of the International Conference on the Protection of the North Sea reflected a consciousness that states 'must not wait for proof of harmful effects before taking action', since damage to the marine environment can be irreversible or remediable only at considerable expense and over a long period.²²⁷ This introduced the idea that precautionary action may be justified on economic grounds. The Ministerial Declaration of the Second North Sea Conference (1987) accepted that, 'in order to protect the North Sea from possibly damaging effects of the most dangerous substances, a precautionary approach is necessary'.²²⁸ At the Third North Sea Conference (1990), Ministers pledged to continue to apply the precautionary principle.²²⁹ The 1990 Bergen Ministerial Declaration on Sustainable Development in the United Nations Economic Commission for Europe (UNECE) Region was the first international instrument to treat the principle as one of general application and linked to sustainable development. The Declaration provided that:

In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.²³⁰

Central to this text is the element of anticipation, reflecting a need for effective environmental measures to be based upon actions which take a longer-term approach and which might predict changes in the basis of our scientific knowledge. Moreover, for the precautionary principle to apply, the threat of environmental damage must be 'serious' or 'irreversible', although the Bergen Declaration did not suggest any limitation on grounds of cost-effectiveness as to the measures which should not be postponed. While the amendments to the Montreal Protocol were being prepared, the UNEP Governing Council recognised that 'waiting for scientific proof regarding the impact of pollutants discharged into the marine environment could result in irreversible damage to the marine environment and in human suffering', and recommended that all governments

²²⁴ Arts. I and V(3)(a). ²²⁵ Preamble. ²²⁶ Preamble. ²²⁷ Bremen, 1 November 1984.

²²⁸ London, 25 November 1987; also PARCOM Recommendation 89/1 (1989) (supporting the 'principle of precautionary action').

²²⁹ The Hague, 8 March 1990. ²³⁰ Bergen, 16 May 1990, para. 7; IPE (I/B/16_05_90).

adopt the 'principle of precautionary action' as the basis of their policy with regard to the prevention and elimination of marine pollution.²³¹

Since that time, numerous environmental treaties, including some which are of global application on environmental matters of broad concern and applicable to almost all human activities, have adopted the precautionary principle or its underlying rationale. Among the earliest was the 1991 Bamako Convention, which requires parties to strive to adopt and implement

the preventive, precautionary approach to pollution which entails, *inter alia*, preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm. The parties shall co-operate with each other in taking the appropriate measures to implement the precautionary principle to pollution prevention through the application of clean production methods.²³²

This formulation is one of the most far-reaching. It links the preventive and precautionary approaches, does not require damage to be 'serious' or 'irreversible', and lowers the threshold at which scientific evidence might require action. The parties to the 1992 Watercourses Convention also agreed to be guided by the precautionary principle

by virtue of which action to avoid the potential transboundary impact of the release of hazardous substances shall not be postponed on the ground that scientific research has not fully proved a causal link between those substances, on the one hand, and the potential transboundary impact, on the other hand.²³³

This formulation limits the application of the principle to transboundary effects alone, although the level of environmental damage is raised above that required by the Bamako Convention to 'significant adverse effect'. The 1992 Biodiversity Convention does not specifically refer to the precautionary principle, although the Preamble notes that, 'where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat'.²³⁴ The level of environmental damage required here is well below the 'serious' or 'irreversible' level required by the 1990 Bergen Declaration. The 2000 Biosafety Protocol relies extensively on the precautionary approach. The objective of the Protocol is stated to be 'in accordance' with Principle 15 of the Rio Declaration, and, to that end, the Protocol affirms that 'lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity' shall not prevent a party from prohibiting imports.²³⁵ The reference to precaution in the 1992 Climate Change Convention was a controversial matter, and the text as finally adopted established limits on the application of the precautionary principle by requiring a threat of 'serious or irreversible damage' and by linking the commitment to an encouragement to take measures that are 'cost effective'.²³⁶ Similar considerations and

²³¹ Governing Council Decision 15/27 (1989). ²³² Art. 4(3)(f).

²³³ Art. 2(5)(a). See also the 1994 Danube Convention, Art. 2(4). ²³⁴ Preamble.

²³⁵ Art. 10(6). See also Art. 11(8) and, in relation to risk assessment, Art. 15 and Annex 3. ²³⁶ Art. 3(3).

objections (voiced particularly by the US) constrained the adoption of the precautionary principle in the 2001 POPs Convention. Even so, the POPs Convention establishes an objective of protecting health and the environment from POPs, '[m]indful of the precautionary approach as set forth in Principle 15 of the Rio Declaration'.²³⁷ In addition, when considering whether to list additional chemicals as POPs under the Convention, the Conference of the Parties is directed to decide 'in a precautionary manner'.²³⁸ Beyond these conventions, many others commit their parties to apply the precautionary principle or approach. The 1992 OSPAR Convention links prevention and precaution: preventive measures are to be taken when there are 'reasonable grounds for concern . . . even when there is no conclusive evidence of a causal relationship between the inputs and the effects'.²³⁹ The threshold here is quite low. The standard applied by the 1992 Baltic Sea Convention introduces yet another variation: preventive measures are to be taken 'when there is reason to assume' that harm might be caused 'even when there is no conclusive evidence of a causal relationship between inputs and their alleged effects'.²⁴⁰ The 1995 Fish Stocks Agreement commits coastal states and states fishing on the high seas to apply the precautionary approach widely, and sets out in detail the modalities for its application.²⁴¹ A large number of other environmental conventions – both regional and global – also give effect to a precautionary approach in relation to many different subject matters.²⁴² In addition, the precautionary principle has been recognised to play a role in international law outside of the environmental field. In the case of *Beef Hormones*, the WTO Appellate Body ruled that 'the precautionary principle has been incorporated and given a specific meaning in Article 5.7 of the [WTO] SPS Agreement'.²⁴³ Since 1992, the precautionary principle has also been an established feature of the EU Treaty,²⁴⁴ with interpretations of its meaning developed by the European Commission,²⁴⁵ and in the case law of the ECJ.²⁴⁶

²³⁷ Art. 1. ²³⁸ Art. 8(9). ²³⁹ Art. 2(2)(a). ²⁴⁰ Art. 3(2).

²⁴¹ Arts. 5(c) and 6 and Annex II (Guidelines for the Application of Precautionary Reference Points in Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks).

²⁴² e.g. 1973 CITES, Res. Conf. 9.24 (1994), ch. 10, pp. 409ff.; 1980 CCAMLR Convention, Art. 2(3); 1989 Waigani Convention, Arts. 1 and 13(3); 1994 Energy Charter Treaty, Art. 18; 1994 Rivers Meuse and Scheldt Agreements, Art. 3(2); 1994 Danube Convention, Art. 2(4) and (5); 1994 Mediterranean Offshore Protocol, Preamble; 1996 ACCOBAMS, Art. II(4); 1999 Rhine Convention, Art. 4; 1996 Protocol to the 1972 London Convention, Art. 3; 2000 Biosafety Protocol, Art. 1; 2002 North-East Pacific Convention, Art. 5(6)(a); 2003 Protocol on Pollutant Release and Transfer Registers, Art. 3(4); 2003 Carpathians Convention, Art. 2(2).

²⁴³ Para. 120.

²⁴⁴ The 1992 Maastricht Treaty amended Art. 130r(2) of the former EC Treaty so that EU action on the environment 'shall be based on the precautionary principle', and the 1997 Amsterdam Treaty further amended the EC Treaty to apply the principle to Community policy on the environment (Art. 174(2)). For the relevant provisions in the EU Treaty, see Art. 191.

²⁴⁵ European Commission, Communication on the Precautionary Principle, COM 2000 (1), 2 February 2000.

²⁴⁶ See e.g. Case C-180/96, *United Kingdom v. Commission* [1998] ECR I-2265 ('the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent', at paras. 99 and 100); see also Case T-70/99, *Alpharma Inc. v. Council of the European Union*, Order of 30 June 1999 [Interim Measures] [1999] ECR II-2027 (where the President of the Court of First Instance referred to the principle and affirmed that 'requirements linked to the protection of public health should undoubtedly be given greater weight than economic considerations'). See also Case C-6/99, *Association Greenpeace France and Others v. Ministère de l'Agriculture et de la Pêche and Others* [2000] ECR I-1651 (French edition) (in relation to Directive 90/220, observance of the precautionary principle is reflected in the notifier's obligation immediately to notify the competent authority of new information regarding the risks of the product to human health or the environment and the competent authority's obligation immediately to inform the Commission and the other member states about this information and, second, in the right of any member state, provisionally to restrict or prohibit the use and/or sale on its territory of a product which has received consent where it has justifiable reasons to consider that it constitutes a risk to human health or the environment (para. 44)).

The precautionary principle has now received widespread support by the international community in relation to a broad range of subject areas. What does the principle mean, and what status does it have in international law? There is no clear and uniform understanding of the meaning of the precautionary principle among states and other members of the international community. At the most general level, it means that states agree to act carefully and with foresight when taking decisions that concern activities that may have an adverse impact on the environment. A more focused interpretation provides that the principle requires activities and substances, which may be harmful to the environment, to be regulated, and possibly prohibited, even if no conclusive or overwhelming evidence is available as to the harm or likely harm they may cause to the environment. As the Bergen Ministerial Declaration put it, 'lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'. Under the Rio Declaration, the requirement is stated to be mandatory: lack of full scientific certainty 'shall not be used' to prevent action. What remains open is the level of scientific uncertainty sufficient to override arguments for postponing measures, or at which measures might even be required as a matter of international law.

A more fundamental change would be adopted by an interpretation of the precautionary principle, which would shift the burden of proof. According to traditional approaches, the burden of proof currently lies with the person opposing an activity to prove that it does or is likely to cause environmental damage. An alternative approach, supported by the precautionary principle, would tend to shift the burden of proof and require the person who wishes to carry out an activity to prove that it will not cause harm to the environment. This interpretation would require polluters, and polluting states, to establish that their activities and the discharge of certain substances would not adversely or significantly affect the environment before they were granted the right to release the potentially polluting substances or carry out the proposed activity. This interpretation may also require national or international regulatory action where the scientific evidence suggests that lack of action may result in serious or irreversible harm to the environment, or where there are divergent views on the risks of action.

There is some evidence to suggest that this interpretation is supported by state practice, even if it still falls short of having sufficient support to allow it to be considered a rule of general application.²⁴⁷ Under the 1992 OSPAR Convention, parties (France and the United Kingdom) which originally wanted to retain the option of dumping low- and intermediate-level radioactive wastes at sea were required to report to the OSPAR Commission on 'the results of scientific studies which show that any potential dumping operations would not result in hazards to human health, harm to living resources or marine ecosystems, damage to amenities or interference with other legitimate uses of the sea'.²⁴⁸

The practice of international courts and tribunals, and of states appearing before them, also sheds some light on the meaning and effect of the precautionary principle. Before the ICJ the principle appears to have first been raised in New Zealand's 1995 request concerning French nuclear testing.²⁴⁹ New Zealand relied extensively on the principle, which it described as 'a very widely accepted and operative principle of international law' and which shifted the burden onto France to prove that the proposed tests would not give rise to environmental

²⁴⁷ The ICJ's ruling in *Pulp Mills*, p. 236, suggests the 'reversal of the burden of proof' interpretation of the precautionary principle is not generally accepted in international law.

²⁴⁸ Annex II, Art. 3(3)(c). ²⁴⁹ Chapter 7, pp. 255–6.

damage.²⁵⁰ Five ‘intervening’ states (Australia, Micronesia, the Marshall Islands, Samoa and the Solomon Islands) also invoked the principle. France responded that the status of the principle in international law was ‘tout à fait incertain’, but that in any event it had been complied with, and that evidentiary burdens were no different in the environmental field than any other area of international law.²⁵¹ The ICJ’s order did not refer to these arguments, although Judge Weeramantry’s dissent noted that the principle had ‘evolved to meet [the] evidentiary difficulty caused by the fact [that] information required to prove a proposition’ may be ‘in the hands of the party causing or threatening the damage’, and that it was ‘gaining increasing support as part of the international law of the environment’.²⁵² In the *Gabčíkovo–Nagymaros* case, Hungary and Slovakia also invoked the precautionary principle.²⁵³ Again, the ICJ did not feel the need to address the principle, limiting itself to a passing reference to Hungary’s claim that the principle justified the termination of the 1977 treaty and its recognition of the parties’ agreement on the need to take environmental concerns seriously and to take the required precautionary measures.²⁵⁴ Of particular note was the failure of the ICJ to refer to or apply the principle in its consideration of the conditions under which Hungary could invoke the concept of ecological necessity to preclude the wrongfulness of its suspension of works on the two barrages in 1989.²⁵⁵ Having acknowledged without difficulty ‘that the concerns expressed by Hungary for its natural environment in the region affected by the Gabčíkovo–Nagymaros Project related to an “essential interest” of that State’, the ICJ nevertheless found that Hungary had not proved that ‘a real, “grave” and “imminent” “peril” existed in 1989 and that the measures taken by Hungary were the only possible response to it’.²⁵⁶ The ICJ found that there were serious uncertainties concerning future harm to freshwater supplies and biodiversity, but that these

could not, alone, establish the objective existence of a ‘peril’ in the sense of a component element of a state of necessity. The word ‘peril’ certainly evokes the idea of ‘risk’; that is precisely what distinguishes ‘peril’ from material damage. But a state of necessity could not exist without a ‘peril’ duly established at the relevant point in time; the mere apprehension of a possible ‘peril’ could not suffice in that respect. It could moreover hardly be otherwise, when the ‘peril’ constituting the state of necessity has at the same time to be ‘grave’ and ‘imminent’. ‘Imminence’ is synonymous with ‘immediacy’ or ‘proximity’ and goes far beyond the concept of ‘possibility’. That does not exclude, in the view of the Court, that a ‘peril’ appearing in the long term might be held to be ‘imminent’ as soon as it is established, at the relevant point in time, that the realization of that peril, however far off it might be, is not thereby any less certain and inevitable.²⁵⁷

²⁵⁰ New Zealand Request, para. 105; see also ICJ CR/95/20, at 20–1 and 36–8. ²⁵¹ ICJ CR/95/20, at 71–2 and 75.

²⁵² (1995) ICJ Reports 342; see also Ad Hoc Judge Palmer (‘the norm involved in the precautionary principle ha[d] developed rapidly and m[ight] now be a principle of customary international law relating to the environment’ (*ibid.*, 412)). See also Judge Weeramantry’s Dissenting Opinion in *The Legality of the Threat or Use of Nuclear Weapons* (1996) ICJ Reports 502.

²⁵³ Chapter 9, pp. 345–51.

²⁵⁴ (1997) ICJ Reports 62, para. 97, and 68, para. 113. See also Chapter 9, pp. 345–51. But see the Separate Opinion of Judge Koroma, that the precautionary principle was incorporated in the 1977 treaty but ‘had not been proved to have been violated to an extent sufficient to have warranted the unilateral termination of the Treaty’ (*ibid.*, 152).

²⁵⁵ The ICJ found that a state of necessity was, on an exceptional basis, a ground recognised by customary international law for precluding the wrongfulness of an act not in conformity with an international obligation, and relied on the formulation of draft Art. 33 of the ILC’s Draft Articles on State Responsibility: (1997) ICJ Reports 7, paras. 50–2.

²⁵⁶ *Ibid.*, para. 54. ²⁵⁷ *Ibid.*

This is not precautionary language, premised as it is on the need to establish the certainty and inevitability of serious harm. However, it must be recognised that the ICJ was concerned here with the application of the law as it stood in 1989, when Hungary had wrongfully (in the view of the ICJ) suspended work on the project. At that time, the precautionary principle had not yet emerged and could not realistically be applied as general international law. It may be that the ICJ also had this in mind when it indicated later in the judgment that '[w]hat might have been a correct application of the law in 1989 or 1992, if the case had been before the Court then, could be a miscarriage of justice if prescribed in 1997'.²⁵⁸ By the time of the *Pulp Mills* case, decided in 2010, the ICJ's position had evolved. In response to arguments put by Argentina, the ICJ noted that, 'while a precautionary approach may be relevant in the interpretation and application of the provisions of the [1975 Uruguay River] Statute, it does not follow that it operates as a reversal of the burden of proof'.²⁵⁹ While this falls well short of any confirmation as to a requirement of precaution in customary law, the Court appears to have recognised that the principle is not without effect, even if in a limited way. ITLOS has also been presented with arguments invoking precaution, and has shown itself to be notably more open to the application of the principle, albeit without express reliance. In 1999, in the *Southern Bluefin Tuna* cases, Australia and New Zealand requested the tribunal to order 'that the parties act consistently with the precautionary principle in fishing for southern bluefin tuna pending a final settlement of the dispute'.²⁶⁰ Japan, the respondent state, did not address the question of the status or effect of the principle. In its Order, the tribunal expressed the view that the parties should 'act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna',²⁶¹ that there was 'scientific uncertainty regarding measures to be taken to conserve the stock of southern bluefin tuna',²⁶² and that, although it could not conclusively assess the scientific evidence presented by the parties, measures should be taken as a matter of urgency to preserve the rights of the parties and to avert further deterioration of the southern bluefin tuna stock.²⁶³ In ordering the parties to refrain from conducting experimental fishing programmes, the tribunal was plainly taking a precautionary approach, as Judge Treves recognised in his Separate Opinion.²⁶⁴

In 2001, in the *MOX* case, Ireland claimed that the United Kingdom had failed to apply a precautionary approach to the protection of the Irish Sea in the exercise of its decision-making authority in relation to the direct and indirect consequences of the operation of the MOX plant and international movements of radioactive materials associated with the operation of the MOX plant.²⁶⁵ The principle was invoked by Ireland at the provisional measures phase to support its claim that the United Kingdom had the burden of demonstrating that no harm would arise from

²⁵⁸ *Ibid.*, para. 134. ²⁵⁹ *Pulp Mills* case, para. 164. ²⁶⁰ Chapter 11, pp. 528–9.

²⁶¹ *Southern Bluefin Tuna* case, Order, para. 77. ²⁶² *Ibid.*, para. 79. ²⁶³ *Ibid.*, para. 80.

²⁶⁴ 'In the present case, it would seem to me that the requirement of urgency is satisfied only in the light of such precautionary approach. I regret that this is not stated explicitly in the Order' (Separate Opinion of Judge Treves, para. 8). See also Separate Opinion of Judge Lang ('Nevertheless, it is not possible, on the basis of the materials available and arguments presented on this application for provisional measures, to determine whether, as the Applicants contend, customary international law recognizes a precautionary principle' (at para. 15), and Ad Hoc Judge Shearer ('The Tribunal has not found it necessary to enter into a discussion of the precautionary principle/approach. However, I believe that the measures ordered by the Tribunal are rightly based upon considerations deriving from a precautionary approach').

²⁶⁵ Chapter 11, p. 473; see Ireland's Statement of Claim, 25 October 2001, para. 34 ('the precautionary principle is a rule of customary international law which is binding upon the United Kingdom and relevant to the assessment of the United Kingdom's actions by reference to [UNCLOS]').

discharges and other consequences of the operation of the MOX plant, and to inform the assessment by the Tribunal of the urgency of the measures it was required to take in respect of the operation of the MOX plant.²⁶⁶ For its part, and while accepting that in assessing the level of risk in any given case considerations of prudence and caution may be relevant, the United Kingdom argued that, in the absence of evidence showing a real risk of harm, precaution could not warrant a restraint of the rights of the United Kingdom to operate the plant.²⁶⁷ The Tribunal did not order the suspension of the operation of the plant, as Ireland had requested, but instead ordered the parties to cooperate and enter into consultations to exchange further information on possible consequences for the Irish Sea arising out of the commissioning of the MOX plant and to devise, as appropriate, measures to prevent pollution of the marine environment which might result from the operation of the MOX plant.²⁶⁸ That Order, which has a certain precautionary character, was premised on considerations of ‘prudence and caution’,²⁶⁹ an approach also taken up in the Provisional Measures Order in the *Land Reclamation* case.²⁷⁰

In its *Advisory Opinion on Responsibilities and Obligations in the Area*, the ITLOS Seabed Disputes Chamber noted that, under the 1982 UNCLOS and related instruments, States sponsoring activities for prospecting and exploration for polymetallic nodules and polymetallic sulphides in the Area had ‘the obligation to apply a precautionary approach’.²⁷¹ The Chamber then went a step further, pointing out that ‘the precautionary approach is also an integral part of the general obligation of due diligence of sponsoring States, which is applicable even outside the scope of the Regulations’, and that ignoring ‘plausible indications of potential risk . . . would amount to a failure to comply with the precautionary approach’.²⁷² Invoking the passage in the *Pulp Mills* judgment, the Chamber noted that the precautionary approach has been incorporated into numerous international treaties and other instruments that reflect Principle 15 of the Rio Declaration, and that this has ‘initiated a trend towards making this approach part of customary international law’.²⁷³

The principle has been addressed by the panels and the Appellate Body in the WTO dispute settlement system.²⁷⁴ In 1998, in the *Beef Hormones* case, the then European Community invoked the principle to justify its claim that it was entitled to prohibit imports of beef produced in the United States and Canada with artificial hormones, where the impacts on human health were uncertain. The Community argued that the principle was already ‘a general customary rule of international law or at least a general principle of law’, that it applied to both the assessment

²⁶⁶ Order of 3 December 2001, para. 71. ²⁶⁷ UK Response, 15 November 2001, para. 150.

²⁶⁸ Order of 3 December 2001, para. 89(1).

²⁶⁹ *Ibid.*, para. 84. See the Separate Opinion of Ad Hoc Judge Szekely (the Tribunal ‘should have been responsive, in the face of such uncertainty, to the Irish demands regarding the application of the precautionary principle (see paragraphs 96 to 101 of the Request, pp. 43–6). It is regrettable that it did not do so, since acting otherwise would have led to granting the provisional measure requested by Ireland regarding the suspension of the commissioning of the plant’).

²⁷⁰ *Land Reclamation* case, Provisional Measures Order, 8 October 2003, para. 99.

²⁷¹ *Responsibilities and Obligations in the Area*, paras. 121–2 and 125–7 (the Chamber noted that Regulation 31(2) of the Nodules Regulations and Regulation 33(2) of the Sulphides Regulations provided that sponsoring states (as well as the Authority) ‘shall apply a precautionary approach, as reflected in Principle 15 of the Rio Declaration’ in order ‘to ensure effective protection for the marine environment from harmful effects which may arise from activities in the Area’, transforming ‘this non-binding statement of the precautionary approach in the Rio Declaration into a binding obligation’ (at para. 127).

²⁷² *Ibid.*, para. 131. ²⁷³ *Ibid.*, para. 135.

²⁷⁴ See generally T. Christoforou, ‘Science, Law and Precaution in Dispute Resolution on Health and Environmental Protection: What Role for Scientific Experts?’, in J. Bourrinet and S. Maljean-Dubois (eds.), *Le Commerce international des organismes génétiquement modifiés* (Paris: La documentation française, 2002).

and the management of a risk, and that it informed the meaning and effect of Articles 5.1 and 5.2 of the WTO's SPS Agreement.²⁷⁵ The United States denied that the principle represented a principle of customary international law, and preferred to characterise it as an 'approach' the content of which may vary from context to context.²⁷⁶ Canada referred to a precautionary approach as 'an emerging principle of international law, which may in the future crystallize into one of the "general principles of law recognized by civilized nations", within the meaning of Article 38(1)(c) of the ICJ Statute'.²⁷⁷ The WTO Appellate Body agreed with the United States and Canada that the precautionary principle did not override Articles 5.1 and 5.2 of the SPS Agreement, although it considered that it was reflected in the Preamble to, and Articles 3.3 and 5.7 of, the SPS Agreement, which did not exhaust the relevance of the principle.²⁷⁸ Recognising that the status of the principle in international law was the subject of continued debate, and that it was regarded by some as having crystallised into a general principle of customary international environmental law, the Appellate Body said:

Whether it has been widely accepted by Members as a principle of general or customary international law appears less than clear. We consider, however, that it is unnecessary, and probably imprudent, for the Appellate Body in this appeal to take a position on this important, but abstract, question. We note that the Panel itself did not make any definitive finding with regard to the status of the precautionary principle in international law and that the precautionary principle, at least outside the field of international environmental law, still awaits authoritative formulation.²⁷⁹

Nearly ten years later, in the *EC – Biotech* case, the WTO panel stated that the legal status of the precautionary principle was 'unsettled', and since it did not need to take a position on whether or not the principle was a recognised principle of general or customary international law it would 'refrain from expressing a view on th[e] issue'.²⁸⁰

The principle has also been raised before human rights courts and commissions. In *San Mateo de Huancho v. Peru*, the Inter-American Commission on Human Rights adopted precautionary measures requiring an environmental impact assessment for the removal of sludge.²⁸¹

²⁷⁵ Chapter 18, pp. 871–81; see Report of the Appellate Body, 16 January 1998, WT/DS48/AB/R, para. 16.

²⁷⁶ *Ibid.*, para. 43. The United States stated that the SPS Agreement recognised a precautionary approach (in its Art. 5.7) so there was no need to invoke a 'precautionary principle' to be risk-averse.

²⁷⁷ *Ibid.*, para. 60.

²⁷⁸ *Ibid.*, para. 124 ('a panel charged with determining . . . whether "sufficient scientific evidence" exists to warrant the maintenance by a Member of a particular SPS measure may, of course, and should, bear in mind that responsible, representative governments commonly act from perspectives of prudence and precaution where risks of irreversible, e.g. life-terminating, damage to human health are concerned'). The Appellate Body went on to state that 'responsible and representative governments may act in good faith on the basis of what, at a given time, may be a divergent opinion coming from qualified and respected sources' (para. 194), a view endorsed in *EC – Asbestos* (Appellate Body Report, 12 March 2001, para. 178), and adding '[i]n justifying a measure under Article XX(b) of the GATT 1994, a Member may also rely, in good faith, on scientific sources which, at that time, may represent a divergent, but qualified and respected, opinion. A Member is not obliged, in setting health policy, automatically to follow what, at a given time, may constitute a majority scientific opinion.'

²⁷⁹ *Ibid.*, para. 123. The Appellate Body noted that, in the *Gabčíkovo–Nagymaros* case, the ICJ had not identified the precautionary principle as a recently developed norm in the field of environmental protection, and had declined to declare that such principle could override the obligations of the 1977 treaty (*ibid.*, note 93).

²⁸⁰ WT/DS291/R, 29 September 2006, para. 7.89.

²⁸¹ Case 12.471, Admissibility Decision of 15 October 2004, para. 12; see further below for the requirement relating to environmental impact assessments and other procedural obligations.

In *Balmer-Schafroth v. Switzerland*, the applicants claimed that the failure of Switzerland to provide for administrative review of a decision extending the operation of a nuclear facility violated Article 6 of the European Convention on Human Rights.²⁸² The claim was rejected by the majority, because the connection between the government's decision and the applicants' right was too remote and tenuous. The Court ruled that the applicants had failed to

establish a direct link between the operating conditions of the power station . . . and their right to protection of their physical integrity, as they failed to show that the operation of Mühleberg power station exposed them personally to a danger that was not only serious but also specific and, above all, imminent. In the absence of such a finding, the effects on the population of the measures which the Federal Council could have ordered to be taken in the instant case therefore remained hypothetical. Consequently, neither the dangers nor the remedies were established with a degree of probability that made the outcome of the proceedings directly decisive.²⁸³

A dissenting opinion by seven judges, however, criticised this finding, on the ground that it 'ignored the whole trend of international institutions and public international law towards protecting persons and heritage, as evident [inter alia] in . . . the development of the precautionary principle'.²⁸⁴ In *Tâtar v. Romania*, the Court went a step further, recalling 'the importance of the precautionary principle' and invoking it in support of its finding that Article 8 of the ECHR had been violated.²⁸⁵

At the national level, there have also been several decisions addressing the status of the precautionary principle in international law. In *Vellore*, for example, the Indian Supreme Court ruled that the precautionary principle was an essential feature of 'sustainable development' and as such part of customary international law.²⁸⁶ By contrast, a US federal court was more restrained in its approach, holding that the principle was not yet established in customary international law so as to give rise to a cause of action under the Alien Tort Claims Statute.²⁸⁷

The legal status of the precautionary principle thus continues to evolve. There is certainly sufficient evidence of state practice to support the conclusion that the principle, as elaborated in Principle 15 of the Rio Declaration and various international conventions, has now received sufficiently broad support to allow a strong argument to be made that it reflects a principle of customary law, and that within the context of the European Union it has now achieved customary status, without prejudice to the precise consequences of its application in any given

²⁸² Judgment of 26 July 1987, *European Court of Human Rights Reports-IV*. Art. 6 of the Convention provides that: 'In the determination of his civil rights and obligations . . . everyone is entitled to a fair . . . hearing . . . by [a] . . . tribunal'.

²⁸³ *Ibid.*, para. 40.

²⁸⁴ Dissenting Opinion of Judge Pettiti, joined by Judges Golcukul, Walsh, Russo, Valticos, Lopes Rocha and Jambrek.

²⁸⁵ Judgment of 27 January 2009, para. 120.

²⁸⁶ *Vellore Citizens' Welfare Forum v. Union of India and Others*, Writ Petition (C) No. 914 of 1991 (Kuldip Singh and Faizanuddin JJ), Judgment of 28 August 1996, paras. 10, 11 and 15. See *Narmada Bachao Andolan v. Union of India and Others*, Supreme Court of India, Judgment of 18 October 2000 (www.narmada.org/sardar-sarovar/sc_ruling/majority.judgment.doc).

²⁸⁷ *Beanal v. Freeport-McMoran*, 969 F Supp 362 at 384 (US District Court for Eastern District of Louisiana, 9 April 1997) ('the principle does not constitute [an] international tort for which there is universal consensus in the international community as to [its] binding status and [its] content'); affirmed 197 F 3d 161 (US Court of Appeals for the Fifth Circuit, 29 November 1999).

case. Although the ICJ and a WTO panel have declined to state that the principle has a customary international law status, the ITLOS Seabed Disputes Chamber has, in effect, reached that conclusion. The reluctance to embrace a clear view is no doubt informed by doubts and differences as to what the practical consequences of the precautionary principle or approach will be in a particular field or in a specific case.²⁸⁸ At the very least, precaution contributes to the interpretation of international instruments in a manner that will enhance the protection of the environment in cases of scientific uncertainty as to the impact of a particular activity.

POLLUTER PAYS PRINCIPLE

The polluter pays principle indicates that the costs of pollution should be borne by the person responsible for causing the pollution. The meaning of the principle, and its application to particular cases and situations, remains open to interpretation, particularly in relation to the nature and extent of the costs included and the circumstances in which the principle will, perhaps exceptionally, not apply. The principle has attracted broad support, and is closely related to the rules governing civil and state liability for environmental damage (as described in Chapter 16), the permissibility of certain forms of state subsidies, and the acknowledgment in various instruments by developed countries of the 'responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment', as well as the financial and other consequences that flow from this acknowledgment.²⁸⁹ The practical implications of the polluter pays principle are in its allocation of economic obligations in relation to environmentally damaging activities, particularly in relation to liability,²⁹⁰ the use of economic instruments, and the application of rules relating to competition and subsidies.²⁹¹

The polluter pays principle has not received the same degree of support accorded over the years to the principle of preventive action, or the attention accorded to the precautionary principle, although its use has been taken up in a number of regional agreements.²⁹² In the *Rhine Chlorides* case, the arbitral tribunal noted that the principle 'features in several international instruments, bilateral as well as multilateral, and . . . operates at various levels of effectiveness', but the tribunal '[did] not view this principle as being a part of general international law'.²⁹³ The strong objections of some countries to the further development of the polluter pays principle, particularly for international relations, is evident from the compromise language adopted by Principle 16 of the Rio Declaration, which provides that:

National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the costs of pollution, with due regard to the public interests and, without distorting international trade and investment.

²⁸⁸ In this sense, see Separate Opinion of Judge Treves, *Southern Bluefin Tuna* case, para. 9.

²⁸⁹ 1992 Rio Declaration, Principle 7.

²⁹⁰ See Institut de Droit International, Resolution on Responsibility and Liability under International Law for Environmental Damage, Art. 13, 37 ILM 1473 (1998).

²⁹¹ See respectively Chapter 16, p. 771; Chapter 4, p. 132; and Chapter 18, p. 894.

²⁹² See e.g. 2002 North-East Pacific Convention, Art. 5(6)(b). ²⁹³ *Rhine Chlorides* case (2004), para. 103.

This text, which falls short of the more specific language of EU, OECD and UNECE instruments, includes language that limits the extent of any obligation that might apply to states.²⁹⁴ This derives, at least in part, from the view held by a number of states, both developed and developing, that the polluter pays principle is applicable at the domestic level but does not govern relations or responsibilities between states at the international level.

The polluter pays principle in treaty law can be traced back to some of the first instruments establishing minimum rules on civil liability for damage resulting from hazardous activities. The conventions on civil liability for nuclear damage, the 1960 Paris Convention and the 1963 Vienna Convention,²⁹⁵ were influenced by the desire to channel compensation from those responsible for the activity causing damage to the victims. Under the 1969 CLC, however, the shipowner was precluded from relying on the limitation of liability if the incident occurred as a result of his actual fault or privity.²⁹⁶

OECD

The first international instrument to refer expressly to the polluter pays principle was the 1972 OECD Council Recommendation on Guiding Principles Concerning the International Economic Aspects of Environmental Policies, which endorsed the polluter pays principle to allocate the costs of pollution prevention and control measures to encourage rational use of environmental resources and avoid distortions in international trade and investment.²⁹⁷ The Recommendation defined the principle in a limited sense to mean that the polluter should bear the expenses of carrying out the measures deemed necessary by public authorities to protect the environment:

In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption. Such measures should not be accompanied by subsidies that would create significant distortions in international trade and investment.²⁹⁸

The 1972 Recommendation does not, on the face of it, apply to the costs of environmental damage. In 1974, the OECD Council adopted a further Recommendation on the Implementation of the Polluter-Pays Principle, which reaffirmed that the principle constituted a 'fundamental principle' for member countries, that aid given for new pollution control technologies and the development of new pollution abatement equipment was not necessarily incompatible with the principle, and that member countries should strive for uniform observance of the principle.²⁹⁹ The 1989 OECD Council Recommendation on the Application of the Polluter-Pays Principle to Accidental Pollution extended the principle to imply that the operator of a hazardous installation should bear the cost of reasonable measures to prevent and control accidental pollution from that installation, which are introduced by public authorities in conformity with domestic law

²⁹⁴ See WSSD Plan of Implementation, para. 14(b). ²⁹⁵ Chapter 16, pp. 773–5.

²⁹⁶ Art. V(2), Chapter 16, p. 780; see also 1977 Civil Liability for Oil Pollution Convention, Art. 6(4).

²⁹⁷ OECD Council Recommendation C(72)128 (1972), 14 ILM 236 (1975).

²⁹⁸ *Ibid.*, Annex, para. A.4. The Council further recommended that 'as a general rule, Member countries should not assist the polluters in bearing the costs of pollution control whether by means of subsidies, tax advantages or other measures'.

²⁹⁹ C(74)223 (1974), paras. I(1), II(3) and III(1), 14 ILM 234 (1975).

prior to the occurrence of an accident.³⁰⁰ According to the Recommendation, however, this does not necessarily require that 'the costs of reasonable measures to control accidental pollution after an accident should be collected as expeditiously as possible from the legal or natural person who is at the origin of the accident'. Such a domestic legal requirement is merely 'consistent with', rather than implied by, the principle.³⁰¹ Examples of specific applications of the polluter pays principle cited by the 1989 Recommendation include adjusting fees or taxes payable by hazardous installations to cover more fully the cost of certain exceptional measures taken by public authorities to prevent and control accidental pollution, and charging to the polluter the cost of reasonable pollution control measures decided on by public authorities following an accident to avoid the spread of environmental damage and limit the release of hazardous substances (by ceasing emissions at the plant), the pollution as such (by cleaning or decontamination), or its ecological effects (by rehabilitating the polluted environment).³⁰² The Recommendation also provides guidance on 'reasonable' measures: they depend on 'the circumstances under which they are implemented, the nature and extent of the measures, the threats and hazard existing when the decision is taken, the laws and regulations in force, and the interests which must be protected'.³⁰³ The Recommendation cites certain exceptions to the principle, including the need for rapid implementation of stringent measures for accident prevention (provided this does not lead to significant distortions in international trade and investment), or if strict and prompt implementation of the principle would lead to severe socioeconomic consequences.³⁰⁴ The application of the principle does not affect the possibility under domestic law of requiring the operator to pay other costs connected with the public authorities' response to an accident, or compensation for future costs of the accident.³⁰⁵

European Union

The polluter pays principle is also established under EU law. The EU adopted the principle in its first programme of action on the environment in 1973.³⁰⁶ Two years later, the European Council adopted a Recommendation regarding cost allocation and action by public authorities on environmental matters that recommended that the EU at Union level and the member states in their national environmental legislation must apply the polluter pays principle, according to which:

natural or legal persons governed by public or private law who are responsible for pollution must pay the costs of such measures as are necessary to eliminate that pollution or to reduce it so as to comply with the standards or equivalent measures laid down by the public authorities.³⁰⁷

³⁰⁰ C(89)88 (Final), 28 ILM 1320 (1989); Appendix Guiding Principles Relating to Accidental Pollution, para. 4; these are measures taken to prevent accidents in specific installations and to limit their consequences for human health and the environment, including safety measures, emergency plans, carrying out clean-up operations and minimising ecological effects, but not including humanitarian measures or measures to compensate victims for economic consequences (para. 8).

³⁰¹ Para. 5.

³⁰² Paras. 10 and 11; pooling by operators of certain financial risks is considered to be 'consistent' with the principle (para. 13).

³⁰³ Para. 12. ³⁰⁴ Paras. 14 and 15. ³⁰⁵ Para. 16. ³⁰⁶ OJ C112, 20 December 1973, 1.

³⁰⁷ Council Recommendation 75/436/EURATOM, ECSC, EEC of 3 March 1975, Annex, para. 2; OJ L169, 29 June 1987, 1.

This formulation is broader than early OECD recommendations in respect of the costs that might be covered by the principle. The Council Recommendation, which is not legally binding, identifies standards and charges as the major instruments of action available to public authorities for the avoidance of pollution, allows certain exceptions to the principle, and sets out which acts will not be considered to be contrary to the principle.³⁰⁸ In 1986, the EEC Treaty was amended to provide that EU action relating to the environment shall be based on the principle that ‘the polluter should pay’.³⁰⁹ In 1992, the EU member states and EFTA member countries agreed that action by the parties was to be based on the principle that ‘the polluter should pay’.³¹⁰ A number of acts of EU secondary legislation also refer to, or incorporate, the principle,³¹¹ and the ECJ has occasionally considered its practical implications.³¹² The principle has also been applied by the European Commission in relation to state aid.³¹³

The polluter pays principle, or variations thereof, as stated in the OECD and EU instruments, has also been referred to or adopted in other environmental treaties, including the 1985 ASEAN Convention,³¹⁴ the 1991 Alpine Convention,³¹⁵ the 1992 UNECE Transboundary Waters Convention,³¹⁶ the 1992 OSPAR Convention,³¹⁷ the 1992 Baltic Sea Convention,³¹⁸ the 1994 Danube Convention,³¹⁹ the 1994 Energy Charter Treaty³²⁰ and the 2003 Carpathians Convention.³²¹ The 1990 Oil Pollution Preparedness Convention and the 1992 Industrial Accidents Convention describe the polluter pays principle as ‘a general principle of international environmental law’.³²² The Preamble to the 2001 POPs Convention reaffirms the formulation of the polluter pays principle found in Principle 16 of the Rio Declaration.

The increased attention paid to the polluter pays principle results, in part, from the greater consideration given to the relationship between environmental protection and economic development, as well as efforts to develop the use of economic instruments in environmental

³⁰⁸ Paras. 5–7.

³⁰⁹ 1957 EEC Treaty (as amended) (formerly Art. 130r(2)); see also former Art. 130(s)(5) of the EEC Treaty as amended by the 1992 Maastricht Treaty, allowing for temporary derogations and/or financial support ‘without prejudice to the principle that the polluter should pay’. See now Art. 191 of the EU Treaty as amended by the Treaty of Lisbon.

³¹⁰ 1992 EEA Agreement, Art. 73(2).

³¹¹ See e.g. Directive 75/442, Art. 15 (waste); Directive 94/67, Preamble (incineration of hazardous waste); Directive 2000/59, Preamble (port reception facilities for ship-generated waste and cargo residues); Directive 2000/60, Art. 9 (water framework); and Decision 2850/2000, Preamble (cooperation in the field of accidental or deliberate marine pollution); Directive 2004/35/EC (environmental liability). See generally EC Commission, Application of the Polluter Pays Principle, 6 December 1999.

³¹² See e.g. Case C-293/97, *R. v. Secretary of State for the Environment and Ministry of Agriculture, Fisheries and Food, ex parte H. A. Standley and Others and D. G. D. Metson and Others* [1999] ECR I-2603, paras. 51–2 (the polluter pays principle reflects a principle of proportionality, and does not mean that farmers must take on burdens for the elimination of pollution to which they have not contributed).

³¹³ See European Commission, Community Guidelines on State Aid for Environmental Protection, 2001 OJ C37. For its application, see e.g. Commission Decision 1999/272, 1999 OJ L109 (‘it is clearly not compatible with the “polluter pays” principle enshrined in Article 130r of the EC Treaty that a polluter should sell his contaminated land to one of his firms in order to avoid the clean-up costs, that the firm responsible for the contamination should file for bankruptcy and that the business activity should be carried on by the newly established firm’).

³¹⁴ Art. 10(d). ³¹⁵ Art. 2(1) (the parties respect the polluter pays principle).

³¹⁶ Art. 2(5)(b) (the parties shall be guided by the polluter pays principle ‘by virtue of which costs of pollution prevention, control and reduction measures shall be borne by the polluter’).

³¹⁷ Art. 2(2)(b) (the parties ‘shall apply . . . the polluter-pays principle’).

³¹⁸ Art. 3(4) (the parties ‘shall apply the polluter-pays principle’). See also 1993 Lugano Convention, Preamble; 1994 Agreement on the Protection of the River Meuse, Art. 3(2)(d); 1996 Protocol to the 1972 London Convention, Art. 3(2).

³¹⁹ Art. 2(4). ³²⁰ Art. 19(1). ³²¹ Art. 2(2)(b). ³²² Preamble.

protection law and policy.³²³ This is likely to lead to clarification and further definition of the polluter pays principle, particularly in relation to two issues.

The first concerns the extent of the pollution control costs that should be paid by the polluter. Although it seems clear that the principle includes the costs of measures required by public authorities to prevent and control pollution, it is less clear whether the costs of decontamination, clean-up and reinstatement would be included. State practice does not support the view that all the costs of pollution should be borne by the polluter, particularly in interstate relations.³²⁴ The second issue concerns exceptions to the principle, particularly in relation to rules governing the granting of subsidies, which are in general not compatible with application of the polluter pays principle. In this regard, account should be taken of the potential role of the WTO in determining the impact of the polluter pays principle on its subsidies rules.³²⁵

PRINCIPLE OF COMMON BUT DIFFERENTIATED RESPONSIBILITY

The principle of common but differentiated responsibility has developed from the application of equity in general international law, and the recognition that the special needs of developing countries must be taken into account in the development, application and interpretation of rules of international environmental law. Principle 7 of the Rio Declaration states the principle thus:

States shall co-operate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, states have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Similar language exists in the 1992 Climate Change Convention, which provides that the parties should act to protect the climate system 'on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities'.³²⁶ Reference to the principle is also made in the 2015 Paris Agreement, although in more muted terms; the Agreement 'will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'.³²⁷

The principle of common but differentiated responsibility includes two elements. The first concerns the common responsibility of states for the protection of the environment, or parts of it, at the national, regional and global levels. The second concerns the need to take account of differing circumstances, particularly in relation to each state's *contribution* to the creation of a particular environmental problem and its *ability* to prevent, reduce and control the threat.

³²³ Chapter 4, pp. 132–7.

³²⁴ See generally Chapter 16; examples include the Chernobyl accident and the 1976 Rhine Chloride Convention, which allocates the costs of pollution abatement between the polluters (66 per cent) and the victim (34 per cent): see Chapter 9, pp. 367–9.

³²⁵ GATT Dispute Settlement Panel, *US – Chemicals Tax* case (1987), holding that GATT rules on tax adjustment allow contracting parties to apply the polluter pays principle but do not require it: Chapter 18, p. 244, n. 325.

³²⁶ Art. 3(1). ³²⁷ Art. 2(2).

In practical terms, the application of the principle of common but differentiated responsibility has at least two consequences. First, it entitles, or may require, all concerned states to participate in international response measures aimed at addressing environmental problems. Second, it leads to environmental standards that impose differing obligations on states. Despite its relatively recent emergence in the current formulation, the principle of common but differentiated responsibility finds its roots prior to UNCED and is supported by state practice at the regional and global levels.

Common Responsibility

Common responsibility describes the shared obligations of two or more states towards the protection of a particular environmental resource, taking into account its relevant characteristics and nature, physical location, and historic usage associated with it. Natural resources can be the 'property' of a single state, or a 'shared natural resource', or subject to a common legal interest, or the property of no state. Common responsibility is likely to apply where the resource is not the property of, or under the exclusive jurisdiction of, a single state.

As early as 1949, tuna and other fish were declared to be 'of common concern' to the parties to the relevant treaties by reason of their continued exploitation by those parties.³²⁸ Outer space and the Moon, on the other hand, are the 'province of all mankind';³²⁹ waterfowl are 'an international resource';³³⁰ natural and cultural heritage is 'part of the world heritage of mankind as a whole';³³¹ the conservation of wild animals is 'for the good of mankind';³³² the resources of the seabed, ocean floor and subsoil are 'the common heritage of mankind';³³³ and plant genetic resources have been defined as 'a heritage of mankind'.³³⁴ State practice also supports the emergence of the concept of 'common concern', as reflected in the 1992 Climate Change Convention, which acknowledges that 'change in the Earth's climate and its adverse effects are a common concern of humankind',³³⁵ and in the 1992 Biodiversity Convention, which affirms that 'biological diversity is a common concern of humankind'.³³⁶ The 2010 Nagoya Protocol to the Biodiversity Convention does not use the language of common concern but recognises 'the interdependence of all countries with regard to genetic resources for food and agriculture'.³³⁷

While each of these formulations differs, and must be understood and applied in the context of the circumstances in which they were adopted, these attributions of 'commonality' do share common consequences. Although state practice is inconclusive as to the precise legal nature and consequence of each formulation, certain legal responsibilities are attributable to all states in respect of these environmental media and natural resources in accordance with the attribution by treaty (or custom) of a particular legal characteristic. The legal interest includes a legal

³²⁸ 1949 Inter-American Tropical Tuna Convention, Preamble. ³²⁹ 1967 Outer Space Treaty, Art. 1.

³³⁰ 1971 Wetlands Convention, Preamble. ³³¹ 1972 World Heritage Convention, Preamble.

³³² 1979 Bonn Convention, Preamble.

³³³ UNGA Res. 2749 (XXV) of 17 December 1970; 1982 UNCLOS, Preamble (and now the 1994 Agreement Relating to the Implementation of Part XI of UNCLOS).

³³⁴ 1983 FAO Plant Genetics Undertaking, Art. 1; see Chapter 10, pp. 424–7.

³³⁵ Preamble. See also UNGA Res. 43/53 (1988), 44/207 (1989) and 45/212 (1990), acknowledging that climate change is a 'common concern of mankind' and rejecting the original proposal in the draft prepared by Malta which described the global climate as the 'common heritage of mankind'. See also 2015 Paris Agreement, preamble, declaring climate change a 'common concern of humankind'.

³³⁶ Preamble. ³³⁷ Preamble.

responsibility to prevent damage to it. While the extent and legal nature of that responsibility will differ for each resource and instrument, the responsibility of each state to prevent harm to them, in particular by the adoption of national environmental standards and international environmental obligations, can also differ.

Differentiated Responsibility

The differentiated responsibility of states for the protection of the environment is widely accepted in treaty and other practice of states. It translates into differentiated environmental standards set on the basis of a range of factors, including special needs and circumstances, future economic development of developing countries, and historic contributions to causing an environmental problem.

The 1972 Stockholm Declaration emphasised the need to consider 'the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries'.³³⁸ The 1974 Charter of Economic Rights and Duties of States made the same point in more precise terms: 'The environmental policies of all states should enhance and not adversely affect the present and future development potential of developing countries.'³³⁹ In the Rio Declaration, the international community agreed that '[e]nvironmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply', and that 'the special situation of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority'.³⁴⁰ The distinction is often made between the capacities of developing countries and their needs.

The differentiated approach is reflected in many treaties. Under the 1996 London Protocol, the measures required are to be adopted by parties 'according to their scientific, technical and economic capabilities'.³⁴¹ Other treaties identify the need to take account of states' 'capabilities',³⁴² or their 'economic capacity' and the 'need for economic development',³⁴³ or the 'means at their disposal and their capabilities'.³⁴⁴ The principle of differentiated responsibility has also been applied to treaties and other legal instruments applying to developed countries. An example is the 1991 VOC Protocol, which allows parties to specify one of three different ways to achieve reduction.³⁴⁵

The special *needs* of developing countries are expressly recognised in other instruments.³⁴⁶ Account is to be taken of their 'circumstances and particular requirements',³⁴⁷ or of their 'specific needs and special circumstances',³⁴⁸ or of their 'special conditions' and 'the fact that economic and social development and eradication of poverty are the first and overriding priorities of the developing country parties'.³⁴⁹

³³⁸ Principle 23. ³³⁹ Art. 30; UNGA Res. 3201 (1974).

³⁴⁰ Principles 11 and 6; see also the 1992 Climate Change Convention, Preamble and 2015 Paris Agreement, Preamble.

³⁴¹ Art. 2. ³⁴² 1981 Abidjan Convention, Art. 4(1). ³⁴³ 1982 UNCLOS, Art. 207.

³⁴⁴ 1985 Vienna Convention, Art. 2(2). ³⁴⁵ Chapter 7, p. 265.

³⁴⁶ 1976 Barcelona Convention, Art. 11(3); 1982 UNCLOS, Preamble. ³⁴⁷ 1985 Vienna Convention, Preamble.

³⁴⁸ 1992 Climate Change Convention, Art. 3(2) (policies and measures 'should be appropriate for the specific conditions of each Party and should be integrated with national development programmes' (Art. 3(4)); 2015 Paris Agreement, Preamble).

³⁴⁹ 1992 Biodiversity Convention, Preamble and Art. 20(4); see also 1992 Climate Change Convention, Art. 4(7).

In practical terms, differentiated responsibility may result in different legal obligations. The different techniques available to apply it include ‘grace’ periods delaying implementation, and less stringent commitments. Under the 1987 Montreal Protocol, the special situation of developing countries entitles them, provided that they meet certain conditions, to delay their compliance with control measures.³⁵⁰ Under the 1992 Climate Change Convention, the principle of ‘common but differentiated responsibilities’ required specific commitments only for developed country parties and other developed parties, and allowed differentiation in reporting requirements.³⁵¹ The 1997 Kyoto Protocol applied the principle of ‘differentiated responsibility’ to OECD countries, setting a range of different targets depending upon states’ historic contribution and capabilities.³⁵² Differentiation between developed and developing countries’ obligations remains in the 2015 Paris Agreement but in a subtler form. Notably, *all* parties are subject to the obligation to undertake ‘ambitious efforts’ on climate change with a view to achieving the Agreement’s goals.³⁵³ However, various accommodations are then permitted for developing countries – and particularly least developed countries and vulnerable small island states – with respect to implementation of commitments regarding reporting, transparency and compliance.³⁵⁴

The special needs of developing countries, the capacities of all countries, and the principle of ‘common but differentiated’ responsibilities have also resulted in the establishment of special institutional mechanisms to provide financial, technological and other technical assistance to developing countries to help them implement the obligations of particular treaties. For instance, the establishment of the Multilateral Fund under the Montreal Protocol – providing financial resources to meet the incremental costs of enabling compliance by developing country parties with their obligations – has provided significant funds to meet the cost of supplying substitutes to controlled substances.³⁵⁵ The 1992 Biodiversity Convention’s financial mechanism is also designed to meet some of the costs of technology transfer as ‘agreed full incremental costs’.³⁵⁶

The general applicability of a principle of differentiated responsibility is, however, not evident, as the ITLOS Seabed Disputes Chamber made clear in its *Advisory Opinion on Responsibilities and Obligations in the Area*. The Chamber was presented with arguments to the effect that developing countries should have less onerous obligations of environmental protection. Examining the question of whether developing sponsoring states enjoyed ‘preferential treatment’ as compared with that granted to developed sponsoring states under the 1982 UNCLOS, the Chamber found that ‘the responsibilities and liability of the sponsoring State apply equally to all sponsoring States, whether developing or developed’, and that equality of treatment was

³⁵⁰ Art. 5(1); see Chapter 7, p. 287. ³⁵¹ Arts. 4 and 12; see further the 1997 Kyoto Protocol, Chapter 8, pp. 307ff.

³⁵² Chapter 8, p. 309. The Protocol also provided for the establishment of different emissions baselines by some states parties that were justified on the basis of the need for a ‘differentiated’ approach.

³⁵³ Art. 3.

³⁵⁴ See Arts. 4, 7, 13 and 15. See also L. Rajamani, ‘Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics’ (2016) 65(2) *International and Comparative Law Quarterly* 493.

³⁵⁵ Art. 10(1); see now Annex VIII, Indicative List of Categories of Incremental Costs, in Annex VIII, Report of the Fourth Meeting of the Parties (25 November 1992), UNEP/OzL.Pro.4/15.

³⁵⁶ Art. 20(1) and (2).

consistent with the need to prevent commercial enterprises based in developed States from setting up companies in developing States, acquiring their nationality and obtaining their sponsorship in the hope of being subjected to less burdensome regulations and controls. The spread of sponsoring States 'of convenience' would jeopardize uniform application of the highest standards of protection of the marine environment, the safe development of activities in the Area and protection of the common heritage of mankind.³⁵⁷

CONCLUSIONS

This chapter illustrates the extent to which the practice of states, international organisations and other members of the international community has given rise to a body of discrete principles and rules which are of general application. While the existence and applicability of 'principles of international environmental law' is now widely acknowledged,³⁵⁸ their legal status and meaning, as well as the consequences of their application to the facts of a particular case or activity, remain open. There are several reasons for this. First, they have emerged over a relatively short period of time, some only within the past three decades. Second, each has emerged in the context of sharp and continuing differences of view as to what they mean in practice, and what they should mean, a point that is particularly evident in relation to the precautionary principle. And, third, the extent to which state practice interprets and applies these principles and rules is still evolving, and requires further consideration by reference to what states do both at the national level and in their international affairs. Nevertheless, good arguments can be made in favour of each having significant legal consequences, and, as has been seen in this chapter, states and international courts and tribunals are willing to rely upon some of these principles and rules to justify their actions and to enable them to reach conclusions in their application of substantive legal obligations to particular sets of facts. In some cases, such application has had far-reaching consequences (for example in the *Southern Bluefin Tuna* cases at the provisional measures phase), and in other cases one or more principles has been invoked as an interpretative tool or otherwise to assist decision-makers in reaching an environmentally protective conclusion.

The principles and rules of general application that have been described in this chapter provide a framework that shapes the structure and development of international environmental law. Each is important and has its own particular role. Two principles currently seem particularly relevant, and are likely to be critical in determining whether international environmental obligations play a marginal or a central role in international affairs. The first is that element of the principle of sustainable development which requires environmental protection to be treated as 'an integral part of the development process [that] cannot be considered in isolation from it'. If any single provision of the Rio Declaration contributes to the normative development

³⁵⁷ ITLOS Seabed Disputes Chamber, Advisory Opinion, paras. 153–61 (by contrast, the Chamber noted that Principle 15 of the Rio Declaration provides that the precautionary approach shall be applied by states 'according to their capabilities', indicating that requirements for complying with the obligation to apply the precautionary approach may be stricter for the developed than for the developing sponsoring states (*ibid.*, para. 161)).

³⁵⁸ *Iron Rhine* case, para. 223.

of international environmental law, this is likely to be it. On the one hand, it can be considered to require all development decisions throughout the range of human economic activity to be subjected to critical environmental scrutiny. If applied in this way, the principle of sustainable development should extend the use of the substantive international environmental norms established over the past several decades to inform decision-making by all states and international organisations, and result in a further reappraisal of the activities of organisations, such as the WTO, which increasingly, in the interpretation and application of their rules, have regard to legal developments beyond their own legal systems. The *Shrimp/Turtle* case indicated the potential for this approach. On the other hand, this aspect of the principle of sustainable development also requires economic and other development considerations to be taken into account in developing and applying those international environmental norms, providing the underlying basis for the emergence of the principle of differentiated responsibility.

The second critical principle is that of precaution, and its likely impact over time is potentially significant. It has already been relied upon, as has been seen in this chapter, to require a shift in the burden of proof in cases concerning the conduct of certain especially hazardous activities. The extent to which it is applied at the international level will serve as a barometer to measure future developments in international environmental law. Some international courts have now been willing to invoke precaution, and others have been willing to do so with stealth. It is surely only a matter of time before other courts follow suit.

FURTHER READING

There is a considerable literature on principles of international environmental law including dedicated texts such as N. de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (2005); S. A. Atapattu, *Emerging Principles of International Environmental Law* (2006); and A. Akhtarkhavari, *Global Governance of the Environment: Environmental Principles and Change in International Law and Politics* (2010).

The following is a selection of resources focusing on several of the principles discussed in this chapter.

- Principle of sovereignty and responsibility:
- B. Bramsen, 'Transnational Pollution and International Law', 42 *Nordisk tidsskrift for International Ret* 153 (1972);
- L. K. Caldwell, 'Concepts in Development of International Environmental Policies', 13 *Natural Resources Journal* 190 (1973);
- G. Handl, 'Territorial Sovereignty and the Problem of Transnational Pollution', 69 *American Journal of International Law* 50 (1975);
- A. L. Springer, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States* (Westport, CT: Quorum Books, 1983);
- N. Schrijver, *Sovereignty Over Natural Resources* (Cambridge: Cambridge University Press, 1997);
- F. Perrez, *Cooperative Sovereignty: From Independence to Interdependence in International Environmental Law* (The Hague: Kluwer, 2000);
- R. Bratspies and R. Miller, *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (Cambridge: Cambridge University Press, 2006);
- S. Jayakumar et al. (eds.), *Transboundary Pollution: Evolving Issues of International Law and Policy* (Cheltenham, UK: Edward Elgar, 2015).

Principle of sustainable development:

- R. D. Munro and J. Lammers, *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (London: Graham & Trotman, 1987);
- W. Clark and R. Munn (eds.), *Sustainable Development of the Biosphere* (Cambridge: Cambridge University Press, 1986);
- Shimizu, 'Legal Principles and Recommendations on Environmental Protection and Sustainable Development', 14 *Nippon Seikyo Kenkyusho-Kiyo* 13 (1990);
- R. D. Munro and M. Holdgate (eds.), *Caring for the Earth: A Strategy for Sustainable Living* (London: Earthscan, 1991);
- P. Sands, 'International Law in the Field of Sustainable Development', 65 *British Year Book of International Law* 303 (1994);
- W. Lang (ed.), *Sustainable Development and International Law* (London: Graham & Trotman, 1995);
- United Nations, Department for Policy Co-ordination and Sustainable Development, *Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development* (UN, 26–28 September 1995);
- A. Boyle and D. Freestone (eds.), *International Law and Sustainable Development* (Oxford: Oxford University Press, 1999);
- EC Commission, *The Law of Sustainable Development: General Principles* (2000);
- D. French, *International Law and Policy of Sustainable Development* (Manchester: Manchester University Press, 2005);
- K. Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (Abingdon, UK: Routledge, 2008);
- C. Voigt, *Sustainable Development as a Principle of International Law: Resolving Conflicts Between Climate Measures and WTO Law* (Leiden: Brill/Nijhoff, 2009);
- UN, *Transforming Our World: The 2030 Agenda for Sustainable Development*, A/RES/70/1 (2015).

Precautionary principle:

- D. Bodansky, 'Scientific Uncertainty and the Precautionary Principle', 33 *Environment* 4 (1991);
- J. Cameron and J. Abouchar, 'The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment', 14 *Boston College International and Comparative Law Review* 1 (1991);
- C. Boyden Gray and D. Rivkin, 'A "No Regrets" Environmental Policy', 83 *Foreign Policy* 47 (1991);
- R. Reh binder, *Das Vorsorgeprinzip in Internationalen Rechtsvergleich* (Dusseldorf: Werner, 1991);
- T. O'Riordan and J. Cameron (eds.), *Interpreting the Precautionary Principle* (London: Earthscan, 1994);
- H. Hohmann (ed.), *Basic Documents of International Environmental Law* (London: Graham & Trotman, 1992);
- D. Freestone and E. Hey, *The Precautionary Principle and International Law* (The Hague: Kluwer, 1995);
- A. Fabra, 'The LOSC and the Implementation of the Precautionary Principle', 10 *Yearbook of International Environmental Law* 15 (1999);
- D. Freestone, 'Caution or Precaution: "A Rose by Any Other Name ..."?', 10 *Yearbook of International Environmental Law* 25 (1999);
- A. Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (The Hague: Kluwer, 2002);
- N. de Sadeleer, *Environmental Principles in an Age of Risk* (Oxford: Oxford University Press, 2003);
- S. Marr, *The Precautionary Principle in the Law of the Sea – Modern Decision-Making in International Law* (The Hague/London: Martinus Nijhoff, 2003);
- S. Shaw and R. Schwartz, *UNU-IAS Report: Trading Precaution – The Precautionary Principle and the WTO* (UNU-IAS, 2005);

- C. Sunstein, *Laws of Fear: Beyond the Precautionary Principle* (Cambridge: Cambridge University Press, 2005);
- E. Fisher, J. Jones and R. von Schomberg (eds.), *Implementing the Precautionary Principle: Perspectives and Prospects* (Cheltenham, UK: Edward Elgar, 2006);
- J. Peel, *Science and Risk Regulation in International Law* (Cambridge: Cambridge University Press, 2010; paperback 2013);
- C. Foster, *Science and the Precautionary Principle in International Courts and Tribunals: Expert Evidence, Burden of Proof and Finality* (Cambridge: Cambridge University Press, 2011; paperback 2013).

Polluter pays principle:

- OECD, *The Polluter-Pays Principle* (1975);
- H. Smets, 'A Propos d'un Ventuel Principe Pollueur-Payeur en Matière de Pollution Transfrontière', 8 *Environmental Policy and Law* 40 (1982);
- S. E. Gaines, 'The Polluter-Pays Principle: From Economic Equity to Environmental Ethos', 26 *Texas International Law Journal* 463 (1991);
- H. J. Kim, 'Subsidy, Polluter-Pays Principle and Financial Assistance Among Countries', 34 *JWTL* 115 (2000).

Principle of common but differentiated responsibilities:

- D. Magraw, 'Legal Treatment of Developing Countries: Differential Contextual and Absolute Norms', 1 *Colorado Journal of International Environmental Law and Policy* 69 (1990);
- D. French, 'Developing States and International Environmental Law: The Importance of Differentiated Responsibilities', 49 *International and Comparative Law Quarterly* 35 (2000);
- C. D. Stone, 'Common But Differentiated Responsibilities in International Law', 98 *American Journal of International Law* 276 (2004);
- L. Rajamani, *Differential Treatment in International Environmental Law* (Oxford: Oxford University Press, 2006);
- Transnational Environmental Law* (2016) 5(2) (special issue).

7

Atmospheric Protection

CHAPTER OUTLINE

This chapter examines international environmental law concerned with protection of the atmosphere. It discusses milestones in legal development in this area such as:

1. seminal international case law, including the *Trail Smelter* arbitration and *Nuclear Tests* case;
2. efforts to codify legal principles relating to transboundary air pollution and protection of the atmosphere; and
3. international negotiations at successive UN environmental summits.

The remainder of the chapter considers the main treaty instruments at global and regional levels addressing three topics:

- (a) urban and transboundary air pollution, with a focus on the UNECE Long-Range Transboundary Air Pollution Convention and its Protocols;
- (b) ozone depletion and the ozone treaty regime of the Vienna Convention and Montreal Protocol; and
- (c) protection of the environment of outer space.

While closely related to the topic of atmospheric protection, the issue of climate change has given rise to its own extensive body of international law requirements that are discussed in the following chapter.

INTRODUCTION

The protection of the atmosphere was a relative latecomer to international environmental regulation but is now well established.¹ With limited exceptions, until 1979 no treaty sought, as its primary purpose, to place limits on the right of states to allow atmospheric emissions that caused environmental damage. Some treaties had, however, called for general preventive

¹ See generally D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), chs 10 and 11; I. Rowlands, 'Atmosphere and Outer Space', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), ch. 14; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), ch. 6.

strategies.² Since 1979, numerous treaties and other international acts have addressed the protection of the atmosphere. The precedents set by treaties relating to the protection of other environmental media, in particular the marine environment, have contributed to the development of these rules.

This chapter discusses the international legal rules concerning protection of the atmosphere, including outer space. Milestones in the development of international law in this area have included: the 1938 and 1941 decisions in the *Trail Smelter* case; the applications brought to the ICJ by Australia and New Zealand against France with respect to French atmospheric nuclear tests in the Pacific Ocean region; efforts by international expert bodies such as the ILA, IDI and ILC to discern customary law rules; and consideration of the issue at successive UN environmental summits. Although there is no atmospheric equivalent to the 1982 UN Convention on the Law of the Sea, international legal instruments on protection of the atmosphere have been adopted at the regional and global levels, often in response to particular air pollution problems or incidents. Examples include growing evidence in Europe and North America in the 1970s of acid rain damage from atmospheric emissions of sulphur compounds; the 1986 Chernobyl accident; growing evidence in the 1980s of depletion of the ozone layer; and greater awareness of the threats posed by forest fires with transnational effects, such as those in Indonesia in 1997 and 2013/2014 which caused widespread regional problems.³ The resulting treaty instruments considered in this chapter address a range of issues, including: (1) urban and transboundary air pollution by a range of air pollutants (such as sulphur dioxide, nitrogen oxide, volatile organic compounds, ammonia, fine particulates including black carbon, heavy metals such as mercury and persistent organic pollutants (POPs)); (2) the protection of the ozone layer; and (3) the protection of the environment of outer space. Prevention of climate change through regulation of emissions of greenhouse gases to the atmosphere has also been a substantial focus of international legal activity. Given the breadth of the international climate change regime – which now extends well beyond atmospheric protection to a range of other issues – climate change is dealt with separately in the next chapter.

Despite the seriousness of many atmospheric pollution threats, international regulation in this area has frequently faced obstacles. At UNCED, protection of the atmosphere was among the most difficult subjects addressed – evidence of the potential impacts of international environmental regulation on the fundamental economic interests of many states.⁴ Since UNCED, however, the field of international atmospheric protection has seen many important advances. Indeed, one treaty – the Montreal Protocol on ozone depleting substances – is widely recognised as establishing the world's most successful environmental regime given its role in slowing and

² See Chapter 6, pp. 211–13.

³ See www.rrcap.unep.org/issues/forestfi/UNEPinitiatives.cfm; Euston Quah, 'Transboundary Pollution in Southeast Asia: The Indonesian Fires', 30(3) *World Development* 429 (2002); J. Mayer, 'Transboundary Perspectives on Managing Indonesia's Fires', 15(2) *Journal of Environment Development* 202 (2006); Nigel Sizer et al., 'Fires in Indonesia Spike to Highest Levels Since June 2013 Haze Emergency', 13 March 2014, World Resources Institute Blog, www.wri.org

⁴ Chapter 9 of Agenda 21, addressing 'Protection of the Atmosphere', was opposed by a number of OPEC states in its entirety. The political sensitivities of the topic are also clear from the introduction to Chapter 9, which states that its recommendations 'do not oblige any Government to take measures which exceed the provisions' of relevant treaties (namely, the 1985 Vienna Convention, the 1987 Montreal Protocol and the 1992 Climate Change Convention). On the other hand, to achieve balance and with an eye to possible future trade disputes over unilateral national atmospheric protection and energy standards, it was also stated that 'within the framework of this chapter, Governments are free to carry out additional measures which are consistent with those legal instruments' (Agenda 21, para. 9.2).

reversing the depletion of the ozone layer.⁵ This treaty, together with the regime under the 1979 UNECE Long-Range Transboundary Air Pollution Convention, are often put forward as models for regulatory efforts in other areas of international environmental law.

MILESTONES IN THE DEVELOPMENT OF ATMOSPHERIC REGULATION

Trail Smelter Case

The award of the arbitral tribunal in the *Trail Smelter* case is frequently cited to support the view that general principles of international law impose obligations on states to prevent transboundary air pollution.⁶ This dispute arose out of damage done to crops, pasture land, trees and agriculture in the United States from sulphur dioxide emissions from a smelting plant at the Consolidated Mining and Smelting Company of Canada at Trail, in British Columbia. Emissions and damage had increased significantly after 1906, and again after 1925 and 1927, leading to the submission of the issue to the US–Canada International Joint Commission established under the 1909 Boundary Waters Treaty. In February 1931, the Commission adopted a unanimous report awarding the United States \$350,000 USD to compensate for damage suffered in the period up to January 1932. The Commission also made recommendations concerning damages arising after January 1932 and the use of equipment to reduce further sulphur emissions. In February 1933, the US complained that further damage was occurring, and in April 1935 the two countries signed a convention submitting the dispute to an arbitral tribunal composed of three arbitrators, assisted by two scientists designated, respectively, by the two countries.⁷ At the heart of the award is the holding of the tribunal that:

Under the principles of international law . . . no state has the right to use or permit the use of territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.⁸

This much-cited passage has been relied upon to justify a range of views concerning the permissibility of certain atmospheric emissions. It is important to remember that the principle cited was applicable *a priori* by virtue of the arbitral *compromis* between the United States and Canada, and that the case is probably of greater significance for that agreement and for its findings on the assessment and measure of the quantum of recoverable damage.⁹

⁵ e.g. D. Fest Grabel, 'Celebrating 20 Years of the Montreal Protocol', *Our Planet Magazine* 20 (2007); S. Barrett, 'The Montreal Protocol', in *Environment and Statecraft: The Strategy of Environmental Treaty-Making* (Oxford: Oxford University Press, 2005).

⁶ *Trail Smelter* case, 16 April 1938, 11 March 1941, 3 RIAA 1907 (1941); R. M. Bratspies and R. A. Miller (eds.), *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (Cambridge: Cambridge University Press, 2006). On damages, see Chapter 17, pp. 749–51.

⁷ Convention on the Final Settlement of the Difficulties Arising Through the Complaints of Damage Done in the State of Washington by Fumes Discharged from the Smelter of the Consolidated Mining and Smelting Company, Trail, British Columbia, 15 April 1935, United States–Canada, 162 LNTS 73.

⁸ 3 RIAA 1907 at 1965 (1941). ⁹ See further, Chapter 16, pp. 759–61.

Nuclear Testing

Atmospheric nuclear testing was one of the first environmental issues to be addressed by the UN General Assembly in the 1950s.¹⁰ This resulted in the adoption of the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (1963 Test Ban Treaty), which prohibited nuclear weapons explosions in those places.¹¹ By 1973, the Treaty had more than 110 parties, including all the major states that possessed nuclear weapons (China, the former Soviet Union, the United Kingdom and the United States) with the exception of France. Between 1966 and 1972, France conducted atmospheric nuclear tests on Mururoa atoll, off its New Caledonian territory in the South Pacific region, and was preparing to conduct a further series of tests commencing in May 1973.¹² Australia and New Zealand commenced proceedings against France before the ICJ to stop these and other nuclear tests in the Pacific. Australia asked the ICJ to declare that the carrying out of further atmospheric nuclear weapon tests was not consistent with applicable rules of international law and to order France not to carry out any further such tests. Australia claimed that the tests would:

- (1) violate its right to be free from atmospheric nuclear weapon tests by any country;
- (2) allow the deposit of radioactive fallout on its territory and airspace without its consent;
- (3) allow interference with ships and aircraft on the high seas and in the superjacent airspace, and the pollution of the high seas by radioactive fallout, thereby infringing the freedom of the high seas.¹³

New Zealand's claim was slightly different: it argued that French nuclear tests violated rules and principles of international law for similar reasons, but framed the application in terms of the violation of 'the rights of all members of the international community' to be free from nuclear tests which gave rise to radioactive fallout and the right to be preserved from 'unjustified artificial radioactive contamination of the terrestrial, maritime and aerial environment'.¹⁴ Australia and New Zealand also sought interim measures of protection requiring the French government to avoid nuclear tests causing the deposit of radioactive fallout on their territory, pending the ICJ's judgments.¹⁵

France chose not to appear in the case. In June 1973, by eight votes to six, the ICJ indicated interim measures of protection, which asked France to take no action that might aggravate the dispute or prejudice the rights of the other parties in carrying out whatever decision the ICJ might render.¹⁶ The ICJ did not have an opportunity to address the merits of the case. Following the unilateral declaration by France that it would cease to carry out atmospheric tests, the ICJ held in December 1974 that the declaration made it unnecessary for the case to proceed, since the claims of Australia and New Zealand no longer had any object, and the ICJ therefore was not called upon to give a decision.¹⁷

¹⁰ See Chapter 2, p. 27. ¹¹ Moscow, 5 August 1963, in force 10 October 1963, 480 UNTS 43.

¹² On subsequent developments declaring the region a nuclear-free zone, see Chapter 12, pp. 601–2.

¹³ *Nuclear Tests case (Australia v. France) (Interim Measures) (1973) ICJ Reports 99 at 103.*

¹⁴ *Nuclear Tests case (New Zealand v. France) (Interim Measures) (1973) ICJ Reports 135 at 139.*

¹⁵ See Chapter 5, p. 183

¹⁶ *Nuclear Tests cases (Australia v. France) (Interim Measures) (1973) ICJ Reports 99; (New Zealand v. France) (Interim Measures) (1973) ICJ Reports 135; on interim measures, see Chapter 5, p. 183.*

¹⁷ *Nuclear Tests cases (Australia v. France) (Jurisdiction) (1974) ICJ Reports 253; (New Zealand v. France) (Jurisdiction) (1974) ICJ Reports 457; L. Goldie, 'Nuclear Test Cases: Restraints on Environmental Harm', *Journal of Maritime Law and Commerce* 491 (1974); on the French unilateral declaration, see Chapter 4, pp. 125–6. In 1995, New Zealand*

The pleadings put forward in the case by Australia and New Zealand, the oral exchanges between some of the judges and counsel for the two applicant states, and the various opinions set forth by the judges, provide a useful source of evidence as to the relevant international law. Australia argued that the 1963 Test Ban Treaty ‘embodied and crystallised an emergent rule of customary international law’ prohibiting atmospheric nuclear tests, which might have assumed the status of a rule of *jus cogens*.¹⁸ During the oral hearings, Australia was asked by the President of the ICJ, Sir Humphrey Waldock, whether it took the view that ‘every transmission by natural causes of chemical or other matter from one state into another state’s territory, air space or territorial sea automatically created a legal cause of action in international law without the need to establish anything more’. Australia responded that:

where, as a result of a normal and natural use by one state of its territory, a deposit occurs in the territory of another, the latter has no cause of complaint unless it suffers more than merely nominal harm or damage. The use by a state of its territory for the conduct of atmospheric nuclear tests is not a normal or natural use of its territory. The Australian government also contends that the radioactive deposit from the French tests gives rise to more than merely nominal harm or damage to Australia . . . [T]he basic principle is that intrusion of any sort into foreign territory is an infringement of sovereignty. Needless to say, the government of Australia does not deny that the practice of states has modified the application of this principle in respect of the interdependence of territories. It has already referred to the instance of smoke drifting across national boundaries. It concedes that there may be no illegality in respect of certain types of chemical fumes in the absence of special types of harm. What it does emphasise is that the legality thus sanctioned by the practice of states is the outcome of the toleration extended to certain activities which produce these emissions, which activities are generally regarded as natural uses of territory in modern industrial society and are tolerated because, while perhaps producing some inconvenience, they have a community benefit.¹⁹

The exchange illustrates the challenge of striking a balance between the community benefit of ‘nominal harm or damage’ and the individual right not to be subject to significant harm or damage.²⁰ In relation to atmospheric pollution, the difficulty in striking that balance may be acute, and the ICJ avoided the issue following the unilateral decision by France to stop carrying out atmospheric nuclear tests. One of the ICJ judges, Judge de Castro, nevertheless took the opportunity, in his dissent, to cite the award in the *Trail Smelter* case, with apparent approval.²¹

requested the ICJ to consider France’s resumption of underground nuclear testing, but the ICJ declined jurisdiction: see Chapter 5, p. 157, n. 107.

¹⁸ *Nuclear Tests* cases (*Australia v. France*) (Interim Measures) (1973) ICJ Reports 99; (*New Zealand v. France*) (Interim Measures) (1973) ICJ Reports 135.

¹⁹ *Ibid.* ²⁰ See more generally Chapter 6, p. 206; and Chapter 16, pp. 739–46.

²¹ *Nuclear Tests* case (*Australia v. France*) (1974) ICJ Reports 253 at 389. He stated: ‘If it is admitted as a general rule that there is a right to demand prohibition of the emissions by neighbouring properties of noxious fumes, the consequence must be drawn, by an obvious analogy, that the applicant is entitled to ask the Court to uphold its claim that France should put an end to the deposit of radioactive fall-out on its territory.’ The *Aerial Herbicide Spraying* case (*Ecuador v. Colombia*), brought before the ICJ by Ecuador in 2008, would have provided the Court with an opportunity to revisit and clarify the issue of the level of environmental damage from atmospheric forms of pollution that is actionable under international law. However, the case was discontinued in September 2013 after the parties reached an

Customary Law

The issues underlying the *Trail Smelter* and *Nuclear Tests* cases raise the question of whether rules of customary law exist specifically in relation to transboundary or other air pollution. This matter was considered by the International Law Association (ILA) and the Institut de Droit International (IDI), both of which adopted resolutions on the subject. Article 3(1) of the ILA's 1982 Montreal Draft Rules on Transboundary Pollution restates customary international law as requiring states 'to prevent . . . transfrontier air pollution to such an extent that no substantial injury is caused in the territory of another state'.²² The general obligation to refrain from causing pollution that might result in substantial injury is reinforced by Article 4, which provides, inter alia, that 'states shall refrain from causing transfrontier pollution by discharging into the environment substances generally considered as being highly dangerous to human health'.

The rule adopted by the IDI in its 1987 Resolution on Transboundary Air Pollution, which does not purport to restate custom, is less strict. Article 2 provides that:

In the exercise of their sovereign right to exploit their resources pursuant to their own environmental policies, states shall be under a duty to take all appropriate and effective measures to ensure that their activities or those conducted within their jurisdiction or under their control cause no transboundary air pollution.²³

With the ICJ's 1996 Advisory Opinion on nuclear weapons, it is clear that customary international law – as reflected in state practice, treaties and other international instruments – prohibits states from causing significant environmental damage from transboundary pollution, including atmospheric pollution.²⁴ The point is confirmed by the International Law Commission's (ILC) 2001 draft Articles on Prevention of Transboundary Harm.²⁵ One of the key issues which remains is the identification of the threshold at which significant, and therefore unlawful, damage has occurred.²⁶ To a certain extent this aspect has been clarified by some of the treaties discussed in the following sections: those which set limits on the individual or collective emissions of certain substances also provide a basis for determining the level at which damage will be more than nominal and in respect of which an action lies under international law. More generally, the opportunity to develop this issue further, through state practice, following the accident at the Chernobyl plant, was lost as a result of the decision by affected states not to press any claim for damages, although several reserved their right to do so.²⁷

agreement resolving their differences. See *Aerial Herbicide Spraying (Ecuador v. Colombia)*, Order of 13 September 2013, ICJ Reports 2013, p. 278.

²² ILA 60th Report (1982), Art. 3(1). The ILA, founded in 1873, is a private organisation of lawyers whose objects include 'the study, clarification and development of international law, both public and private, and the furtherance of international understanding and respect for international law' (Art. 3.1 of the ILA Constitution, adopted at the 74th Conference, 2010).

²³ 62 *Annuaire de l'Institut de Droit International* (1987-II), Art. 10, requires states to 'prohibit, prevent and refrain from carrying out any nuclear explosion likely to cause transboundary air pollution of a radioactive nature'. The Institut de Droit International, founded in 1873, is a private association of scholars of public and private international law that aims to facilitate the progress of international law (Art. 1(2) of the IDI Statute).

²⁴ Chapter 6, p. 202. ²⁵ At draft Art. 3; see Chapter 6, pp. 211–12. ²⁶ See Chapter 16, pp. 743–6.

²⁷ Chapter 16, p. 752. The release of radioactive pollution from the Fukushima Nuclear Power Plant in northern Japan following the devastating earthquake and tsunami in March 2011 raised similar issues of radioactive materials causing widespread marine pollution, affecting other countries in the region.

The most recent effort to codify international rules relating to protection of the atmosphere is the work of the ILC on the topic. The political sensitivities of the issue are indicated by several 'understandings' that guide and constrain the ILC's work,²⁸ namely:

- (a) Work on the topic will proceed in a manner so as not to interfere with relevant political negotiations, including on climate change, ozone depletion, and long-range transboundary air pollution. The topic will not deal with, but is also without prejudice to, questions such as: liability of States and their nationals, the polluter-pays principle, the precautionary principle, common but differentiated responsibilities, and the transfer of funds and technology to developing countries, including intellectual property rights;
- (b) The topic will also not deal with specific substances, such as black carbon, tropospheric ozone, and other dual-impact substances, which are the subject of negotiations among States. The project will not seek to 'fill' gaps in the treaty regimes;
- (c) Questions relating to outer space, including its delimitation, are not part of the topic;
- (d) The outcome of the work on the topic will be draft guidelines that do not seek to impose on current treaty regimes legal rules or legal principles not already contained therein.

The Special Rapporteur has issued two reports, with the second including draft guidelines on questions of definition, scope, basic principles, the degradation of atmospheric conditions as a common concern of humankind, a general obligation of states to protect the atmosphere, and international cooperation.²⁹ Several of these guidelines were subsequently adopted by the ILC following review by the Commission's drafting committee. The adopted sections include preambular paragraphs recognising that 'the protection of the atmosphere from atmospheric pollution and atmospheric degradation is a pressing concern of the international community as a whole' and draft guideline 5 placing an obligation on states 'to cooperate, as appropriate, with each other and with relevant international organisations for the protection of the atmosphere from atmospheric pollution and atmospheric degradation'.³⁰

UN Environmental Summits

Atmospheric protection was an important area of consideration at both UNCED and WSSD (by contrast, the topic was not directly mentioned in the outcome document from the Rio+20 Summit – *The Future We Want* – beyond references to combating climate change). Agenda 21 devoted an entire chapter to the subject of atmospheric protection, identifying four programme areas. These related to: addressing uncertainties (essentially concerned with improving understanding of the processes that influence and are influenced by the Earth's atmosphere on a global, regional and local scale, enhancing international cooperation, and improving understanding of the economic and social consequences of atmospheric changes and mitigation and

²⁸ Report of the International Law Commission on the Work of its 65th Session, 6 May to 7 June and 8 July to 9 August 2013, A/68/10, 2013, para. 168.

²⁹ Second Report on the Protection of the Atmosphere by Shinya Murase, Special Rapporteur, ILC, 67th Session, 4 May to 5 June and 6 July to 7 August 2015, 2 March 2015, A/CN.4/681.

³⁰ ILC, Protection of the Atmosphere: Text and titles of draft conclusions 1, 2 and 5, and preambular paragraphs provisionally adopted by the Drafting Committee on 13, 18, 19 and 20 May 2015, 67th Session A/CN.4/L.851, 22 May 2015.

response measures);³¹ promoting sustainable development; preventing stratospheric ozone depletion;³² and strengthening arrangements for limiting transboundary air pollution.³³ Underpinning the Agenda 21 provisions was the recognition that the realisation of sustainable development lies at the heart of solving problems of transboundary air pollution, ozone depletion and climate change. Other programme areas dealt with by Agenda 21 also have significance for the development of international law on the prevention of atmospheric pollution. For instance, Agenda 21 included a programme area on transportation, with an overall objective to develop cost-effective policies and programmes to limit, reduce or control harmful atmospheric emissions and other adverse environmental effects of the transport sector, taking into account development priorities, safety and national circumstances.³⁴ Likewise, the programme area on industrial development sought to encourage industrial development in ways that minimise adverse impacts on the atmosphere by increasing industry's efficiency in consumption and production, improving pollution abatement technologies, and developing new environmentally sound technologies.³⁵ Agenda 21 envisaged the achievement of both programme areas through measures taken by governments, intergovernmental and non-governmental organisations and the private sector, inter alia, by: developing cost-effective, more efficient and less polluting transport systems, particularly rural and urban mass transit; encouraging the transfer of resource-efficient and less polluting transport and other industrial technologies, particularly to developing countries; developing technologies, products and processes which are less polluting and more efficient in their use of natural resources; and promoting administrative, social and economic measures to encourage modes of transport modes and industrial practices which minimise adverse impacts on the atmosphere.³⁶ Two decades later these remain pressing, but largely unresolved, challenges.

Compared with Agenda 21, the WSSD Plan of Implementation provided far less concrete guidance on the future development of international regulation of atmospheric pollution. At both WSSD and the later Rio+20 Summit, the issue of climate change attracted the bulk of states' attention. On other issues of atmospheric pollution beyond climate change, the Plan of Implementation called for strengthening of the capacity of developing countries and economies in transition to assess and reduce the impacts of transboundary air pollution; ensuring replenishment of the fund maintained under the 1987 Montreal Protocol and supporting the Protocol's compliance mechanism; and addressing illegal traffic in ozone-depleting substances.³⁷

URBAN AND TRANSBOUNDARY AIR POLLUTION

Concerns over urban and transboundary air pollution began to emerge in the late nineteenth century as the consequences of large-scale industrialisation and intensive development became evident. The *Trail Smelter* case, discussed above, was the first major international dispute over transboundary air pollution and was notable for its reliance on scientific expertise to discern the links between gaseous emissions from the zinc smelter at Trail, and damage to crops, forests, soil and waterways across the border in Washington State. Science has continued to be a crucial

³¹ Agenda 21, para. 9.7. ³² Agenda 21, paras. 9.23 and 9.24(a). ³³ Agenda 21, paras. 9.26, 9.27(e) and 9.28(a).
³⁴ Para. 9.14. ³⁵ Para. 9.17. ³⁶ Paras. 9.15 and 9.18. ³⁷ Para. 37.

element of regulatory efforts addressing urban and transboundary air pollution given the need to identify the environmental and human health effects of emissions of particular gases.

Today, anthropogenic emissions of gases that are prevalent worldwide, both as urban air pollutants and as transboundary atmospheric depositions, include oxides of sulphur (SO_x), nitrogen oxides (NO_x), carbon monoxide (CO), ozone (O₃), trace organics (aldehydes, benzene and polyaromatic hydrocarbons), selected trace metals (most notably, lead) and suspended particulates,³⁸ as well as air pollution from aircraft and ships.³⁹ Sulphur dioxide (SO₂) (the pollutant at issue in *Trail Smelter*) is produced by the combustion of high-sulphur-content fossil fuels (coal and oil) and contributes to acid rain, as well as being harmful to human health as a potent respiratory tract irritant. Combustion of fossil fuels, particularly from motor vehicles and power stations, also produces two oxides of nitrogen (nitric oxide (NO) and nitrogen dioxide (NO₂), collectively known as NO_x). Ambient concentrations of NO₂ are generally considered to be too low to pose a significant threat to human health, but NO_x, together with hydrocarbons, are important precursors to the formation of tropospheric O₃ and other photochemical oxidants. Sulphur and nitrogen oxides are transported by prevailing winds for distances up to 1,000 km from their original source before returning to the surface of the Earth as wet or dry deposits.

Acid rain associated with fluxes of sulphur and nitrogen over North America and Europe emerged as a concern in the 1960s, with observations of adverse effects flowing from deposits, including the acidification of freshwaters and terrestrial ecosystems. Although these problems were initially limited to developed countries, there are indications that certain tropical regions in developing countries, including southern China, India, Thailand, Korea, south eastern Brazil and northern Venezuela, are also experiencing significant problems with acidification, in large part due to rapid industrialisation. Haze caused by atmospheric pollution from forest fires in Indonesia also emerged as a major concern in the Asian region during the late 1990s. Recent international air pollution efforts have focused on fine particulate matter (PM_{2.5}), including black carbon. The urban and transboundary air pollutants responsible for such environmental problems are subject to a number of regional arrangements.⁴⁰ While the majority of the specific international agreements relate to Europe and North America, increasing efforts regulate transboundary air pollution in Africa and Asia.⁴¹ In 2013, the Minamata Convention on Mercury was concluded, marking the first global treaty to deal with an air pollution issue – air emissions of the heavy metal, mercury.

³⁸ See UNEP, *Environmental Data Report* (1991), 10, 12 and 37–40. The GEO Data Portal is now the authoritative source for data sets used by UNEP. Its online database can be accessed at <http://geodata.grid.unep.ch>

³⁹ Chapter 8, pp. 332–4.

⁴⁰ See e.g. the UNECE Vehicle Regulations adopted under the 1958 Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which Can Be Fitted and/or Be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, Geneva, 20 March 1958, in force 20 June 1959; 335 UNTS 211. The Regulations establish uniform conditions for the licensing of motor vehicles and parts as well as the standardisation of environmental specifications for cars.

⁴¹ Moves towards regulation in several regions have been initiated under the auspices of UNEP. See e.g. Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia, 20 March 1998; Eastern Africa Regional Framework Agreement on Air Pollution, Nairobi, 23 October 2008; Southern African Development Community (SADC) Regional Policy Framework on Air Pollution, Lukasa, 7 March 2008; West and Central Africa Regional Framework Agreement on Air Pollution, Abidjan, 22 July 2009. See also 2002 ASEAN Agreement on Transboundary Haze Pollution, pp. 274–5.

1979 UNECE Convention on Long-Range Transboundary Air Pollution and Its Protocols

The 1979 UNECE Convention on Long-Range Transboundary Air Pollution (1979 LRTAP Convention)⁴² addresses the problem of acid rain and other air pollutants, and is the only major multilateral agreement concerned with the control of transboundary air pollution. While the treaty has a restricted regional scope (Europe and North America), it has nevertheless served as a model for subsequent treaties adopted at the global level to address climate change and ozone depletion, and provides a precedent for other regions in their efforts to address acid rain and related transboundary atmospheric problems.

The 1979 LRTAP Convention was developed following the Stockholm Declaration, in particular Principle 21, and the environmental chapter of the Final Act of the 1975 Conference on Security and Co-operation in Europe (CSCE). It was one of the first treaties to recognise the adverse effects of air pollution over the short and long term. The Convention is supplemented by eight protocols (on the financing of the monitoring programme, on the emissions of sulphur, nitrogen oxides, volatile organic compounds, heavy metals and persistent organic pollutants (POPs), and on abatement of acidification, eutrophication and ground-level ozone).

1979 LRTAP Convention

The 1979 LRTAP Convention established a regional framework to protect man and the environment against air pollution, and includes a general obligation on parties to 'endeavour to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution'.⁴³ This soft commitment, which is without target or timetable, nevertheless establishes a general limitation on the right to emit atmospheric pollutants. The definitions set out in the Convention have been relied upon in other instruments. The definition of 'air pollution' is broad enough to include atmospheric emissions of greenhouse gases and ozone-depleting substances as 'air pollutants', although the use of the word 'resulting' suggests that actual deleterious effects must have occurred and that gases subject to precautionary measures of regulatory action in the absence of actual deleterious effects may not be considered to be pollutants.⁴⁴ 'Long-range transboundary air pollution' is defined in the Convention as:

air pollution whose physical origin is situated wholly or in part within the area under the national jurisdiction of one state and which has adverse effects in the area under the jurisdiction of another state at such a distance that it is not generally possible to distinguish the contribution of individual emission sources or groups of sources.⁴⁵

⁴² Geneva, 13 November 1979, in force 16 March 1983, 18 ILM 1442 (1979); www.unece.org/env/lrtap. Fifty states and the European Community are parties to the Convention. See generally A. Rosencrantz, 'ECE Convention of 1979 on Long-Range Transboundary Air Pollution', 75 *American Journal of International Law* 975 (1981); C. I. Jackson, 'A Tenth Anniversary Review of the ECE Convention on Long-Range Transboundary Air Pollution', 2 *International Environmental Affairs* 217 (1990); A. Fraenkel, 'The Convention on Long-Range Transboundary Air Pollution: Meeting the Challenge of International Co-operation', 30(2) *Harvard International Law Journal* 447 (1989); T. Kuokkanen, 'Putting Gentle Pressures on Parties: Recent Trends in the Practice of the Implementation Committee under the Convention on Long-Range Transboundary Air Pollution', in J. Petman and J. Klabbers (eds.), *Nordic Cosmopolitanism: Essays in International Law for Martti Koskeniemi* (The Hague/London: Martinus Nijhoff, 2004), 315–26.

⁴³ Art. 2. ⁴⁴ Art. 1(a), Chapter 1, pp. 14–15. ⁴⁵ Art. 1(b).

The 1979 LRTAP Convention includes general commitments on policies and strategies to combat the discharge of air pollutants, the exchange of relevant information and review of policies, scientific activities and technical measures, and cooperation in research.⁴⁶ Consultations are to be held between parties actually affected by, or exposed to, a significant risk of long-range transboundary air pollution, and parties within which and subject to whose jurisdiction a significant contribution originates or could originate from activities carried on or contemplated.⁴⁷ While the requirement to consult may appear rather obvious now, it was, at the time, a notable development that influenced subsequent practice in related areas.⁴⁸

Without being bound by any specific commitments for air quality management, the parties nevertheless must develop the best policies and strategies, including air quality management and control measures, in particular by using best available technology that is economically feasible, as well as low- and non-waste technology.⁴⁹ Information is to be exchanged on: the emissions data of agreed air pollutants; major changes in policies and industrial development and their potential impact; control technologies; the costs of emissions control; physico-chemical and biological data relating to the effects of long-range transboundary air pollution and the extent of the resulting damage; and policies and strategies for the control of sulphur compounds and other major oil pollutants.⁵⁰

The LRTAP Convention also establishes a 'Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe' (EMEP), to monitor sulphur dioxide and related substances and to develop and use comparable or standardised monitoring procedures, and establish monitoring stations as part of an international programme.⁵¹ At present, more than 200 monitoring stations in forty UNECE countries participate in the EMEP. Institutional arrangements comprise an Executive Body, composed of representatives of the parties to review implementation of the Convention, utilising EMEP's Steering Body, and assisted by the Executive Secretary of the UNECE, which carries out secretariat functions.⁵²

Although the 1979 LRTAP Convention is essentially a framework convention setting general commitments, it has subsequently provided the forum for the adoption of eight protocols. These establish more detailed commitments, including regulations on the levels of emissions of particular substances.

1984 Monitoring and Evaluation Protocol

The first Protocol to the LRTAP Convention provided for 'Long-Term Financing of the Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe'.⁵³ It sought to ensure the availability of adequate financial resources to implement EMEP beyond amounts provided by UNEP and voluntary contributions.

⁴⁶ Arts. 3, 4 and 7. ⁴⁷ Art. 5. ⁴⁸ Chapter 15, pp. 694–6. ⁴⁹ Art. 6.

⁵⁰ Art. 8; this Article includes a footnote which states that '[t]he present Convention does not contain a rule on State Liability as to damage'.

⁵¹ Art. 9. ⁵² Arts. 10 and 11.

⁵³ Geneva, 28 September 1984, in force 28 January 1988, 2 SMTE 285; forty-six states are parties to the Protocol. Related international monitoring systems include the WMO's Atmospheric Research and Environment Programme. The ECE has also established six International Co-operative Programmes on Assessment and Monitoring of Air Pollution Effects on Forests (1985); on Assessment and Monitoring Effects of Air Pollution on Rivers and Lakes (1985); on Effects of Air Pollution on Materials, Including Historic and Cultural Monuments (1985); on Effects of Air Pollution on Natural Vegetation and Crops (1987); on Integrated Monitoring of Air Pollution Effects on Ecosystems (1988); and on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends (1988).

The 1984 Protocol provides for financing the costs of the international centres cooperating within EMEP on the basis of mandatory contributions covering the annual costs of the EMEP work programme, supplemented by voluntary contributions.⁵⁴ The basis of annual contributions is set out in an Annex.⁵⁵

1985 Sulphur Protocol

The second Protocol to the LRTAP Convention concerned the 'Reduction of Sulphur Emissions or Their Transboundary Fluxes by at Least 30 Per Cent' (1985 Sulphur Protocol).⁵⁶ It was adopted in response to evidence of widespread damage in parts of Europe and North America to natural resources, and to historical monuments and human health, caused by acidification of the environment from sulphur dioxide, nitrogen oxides and other pollutants from the combustion of fossil fuels. The 1985 Protocol established a 'Thirty Per Cent Club' by committing all parties to

reduce their national annual sulphur emissions or their transboundary fluxes by at least thirty per cent as soon as possible and at the latest by 1993, using 1980 levels as the basis for calculation of reductions.⁵⁷

This inflexible approach to standard-setting has not been adopted in the subsequent Protocols to the 1979 LRTAP Convention because it fails to take account of current and historic emissions and other differentials existing between states. For EU member states, in any event, the Protocol was superseded by the 1988/2001 Large Combustion Plants Directive and later the 2010 Industrial Emissions Directive.⁵⁸ The 1985 Protocol required parties to report annually to the Executive Body of the LRTAP Convention on their national, annual sulphur emissions, including the method of calculation, the progress made towards achieving targets (without specifying a particular time frame), and the national programmes, policies and strategies adopted for reaching targets.⁵⁹

As a result of the Protocol, substantial cuts in sulphur emissions were recorded in Europe. By 1993, the parties to the 1985 Sulphur Protocol as a whole had reduced 1980 sulphur emissions by more than 50 per cent. Individually, some eleven parties achieved even more substantial reductions of at least 60 per cent. The 1985 Sulphur Protocol envisaged further reductions, and additional requirements for sulphur emissions were adopted in the 1994 Protocol on Further Reduction of Sulphur Emissions and the 1999 Gothenburg Protocol, discussed further below.

1988 NO_x Protocol

The third Protocol to the LRTAP Convention concerned the 'Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes' (1988 NO_x Protocol).⁶⁰ It is more comprehensive and flexible than the 1985 Sulphur Protocol. It required the reduction of 'total annual emissions', introducing into international law the concepts of 'national emissions standards' and an

⁵⁴ Arts. 2 and 3(1), (2) and (4). ⁵⁵ Art. 4 and Annex.

⁵⁶ Helsinki, 8 July 1985, in force 2 September 1987; twenty-five states are parties to the Protocol; 27 ILM 707 (1988).

⁵⁷ Art. 2. To this end, parties agree to develop national programmes, policies and strategies (Art. 6).

⁵⁸ See Directive 2010/75 on industrial emissions, which is the successor to the Large Combustion Plant Directive (2001/80/EC). A 'large' combustion plant is one with a rated thermal input equal to or greater than 50 MW.

⁵⁹ Arts. 4 and 6.

⁶⁰ Sofia, 31 October 1988, in force 14 February 1991; thirty-five states are parties to the Protocol; 28 ILM 214 (1989).

approach based on 'critical loads aimed at the establishment of an effect-oriented scientific basis'. It also recognised the need to 'create more favourable conditions for exchange of technology'.⁶¹ The 1988 NO_x Protocol specifically required all parties

as soon as possible and as a first step, [to] take effective measures to control and/or reduce their national annual emissions of nitrogen oxides or their transboundary fluxes so that these, at the latest by 31 December 1994, do not exceed their national annual emissions of nitrogen oxides or transboundary fluxes of such emissions for the calendar year 1987 or any previous year to be specified upon signature of, or accession to, the Protocol, provided that in addition, with respect to any party specifying such a previous year, its national average annual transboundary fluxes or national average annual emissions of nitrogen oxides for the period from 1 January 1987 to 1 January 1996 do not exceed its transboundary fluxes or national emissions for the calendar year 1987.⁶²

All parties were required to apply national emissions standards to new mobile sources in all major source categories, and introduce pollution control measures for major existing stationary sources.⁶³ National standards must be based on 'best available technologies which are economically feasible' and take into consideration, inter alia, the Technical Annex to the Protocol.⁶⁴ By the end of 1994, overall emissions of parties to the 1988 NO_x Protocol demonstrated a reduction of 9 per cent compared to the 1987 baseline. In addition, nineteen parties have reached the target set by the Protocol, stabilising emissions at or below 1987 levels (or 1978 levels in the case of the United States).

However, the parties to the 1988 NO_x Protocol were required to take additional measures, which have proven more difficult to achieve. Within six months of the entry into force of the Protocol, parties were to commence negotiations on further steps to reduce national annual emissions, taking into account the best available scientific and technological developments, internationally accepted critical loads, and other elements resulting from work programmes.⁶⁵ Parties were required also to cooperate to establish critical loads, reductions based on critical loads, and measures and a timetable commencing no later than 1 January 1996 for achieving such reductions.⁶⁶ Parties were free to adopt more stringent measures than those required by Article 2.⁶⁷ For parties to the Gothenburg Protocol, discussed below, the requirements of the NO_x Protocol were largely superseded by new limits on NO_x emissions introduced by that Protocol.

The 1988 NO_x Protocol provides for the exchange of technology to reduce emissions, consistent with national laws, regulations and practices, and requires that unleaded fuel be made sufficiently available to facilitate the international circulation of vehicles equipped with catalytic converters.⁶⁸ The Protocol further requires parties: to give high priority to research and monitoring through national research programmes and the work plan of the Executive Body;

⁶¹ Preambular paras. 3, 6, 8 and 9. ⁶² Art. 2(1). ⁶³ Art. 2(2)(a), (b) and (c).

⁶⁴ *Ibid.* The Technical Annex forms an integral part of the Protocol but is only recommendatory in nature (Art. 10). It was amended in 1996 to include provisions on control technologies for emissions of nitrous oxides from off-road vehicles and machines, ships and aircraft.

⁶⁵ Art. 2(3)(a). 'Critical load' is defined as 'a quantitative estimate of the exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge' (Art. 1(7)).

⁶⁶ Art. 2(3)(b). ⁶⁷ Art. 2(4). ⁶⁸ Arts. 3 and 4.

to develop national programmes, policies and strategies to control and reduce emissions under the Protocol; to participate in information exchange; and to report annually to the Executive Body on obligations under the Protocol (including, in particular, levels of national annual emissions, progress in applying national emissions standards and on introducing pollution control measures, in making unleaded fuel available, and in establishing critical loads).⁶⁹ EMEP provides the Executive Body with calculations of nitrogen budgets, transboundary fluxes and deposits of nitrogen oxides.⁷⁰ The Protocol is implemented under the authority of the institutions of the LRTAP Convention.

1991 Volatile Organic Compounds Protocol

The fourth Protocol addressed the 'Control of Emissions of Volatile Organic Compounds and Their Transboundary Fluxes' (1991 VOC Protocol).⁷¹ Volatile organic compounds (VOCs) are mainly emitted through incomplete combustion of fossil fuels in the engines of motor vehicles,⁷² and are released into the atmosphere due to evaporation during refining, distribution and use of petrol and during the use of products containing solvents such as paints, glues and inks. In keeping with the developing complexity and sophistication of the earlier Protocols, the 1991 VOC Protocol built significantly on the base provided by its earlier siblings, and established specific targets and timetables committing parties to control and reduce their emissions of VOCs. Unlike the earlier LRTAP Protocols, the parties had a choice of at least three ways to meet this requirement, specified upon signature. This reflected the need to adopt differentiated commitments based on a party's emissions and particular geographic and demographic circumstances. The first option was for a party simply to

take effective measures to reduce its national annual emissions of VOCs by at least thirty per cent by the year 1999, using 1988 levels as a basis or any other annual level during the period 1984 to 1990, which it may specify upon signature of or accession to the present Protocol.⁷³

The second option was only available to a party whose annual emissions contributed to tropospheric ozone concentrations in areas under the jurisdiction of one or more other parties, and where such emissions originated only from areas under its jurisdiction that were specified as tropospheric ozone management areas (TOMAs) under Annex 1 to the Protocol.⁷⁴ A party that chose this option was required to:

⁶⁹ Arts. 6, 7 and 8. ⁷⁰ Art. 9.

⁷¹ Geneva, 18 November 1991, in force 29 September 1997, 31 ILM 568 (1992); twenty-four states are parties to the Protocol.

⁷² VOCs are defined, unless otherwise specified, as 'all organic compounds of anthropogenic nature, other than methane, that are capable of producing photochemical oxidants by reactions with nitrogen oxides in the presence of sunlight' (Art. 1(9)).

⁷³ Art. 2(2)(a). This option was chosen by Austria, Belgium, Estonia, Finland, France, Germany, the Netherlands, Portugal, Spain, Sweden and the United Kingdom (with 1988 as base year), by Denmark (with 1985 as base year), by Liechtenstein, Switzerland and the United States (with 1984 as base year) and by the Czech Republic, Italy, Luxembourg, Monaco and Slovakia (with 1990 as base year).

⁷⁴ Art. 2(2)(b). Canada has designated two TOMAs within its territory, and Norway has designated the whole of its mainland and parts of its exclusive economic zone as TOMAs (Annex I).

- (1) reduce its annual emissions of VOCs from the areas so specified by at least 30 per cent by the year 1999, using 1988 levels as a basis or any other annual level during the period 1984–90, specified upon signature of or accession to the present Protocol; and
- (2) ensure that its total national annual emissions of VOCs by the year 1999 did not exceed the 1988 levels.⁷⁵

The third option was only available to a party whose annual emissions of VOCs in 1988 were lower than 500,000 tonnes and 20 kilogrammes per inhabitant and 5 tonnes per square kilometre. Such a party could opt as soon as possible, and as a first step, to 'take effective measures to ensure at least that at the latest by the year 1999 its annual emissions of VOCs do not exceed the 1988 levels'.⁷⁶ Of the states that signed the Protocol, three chose the option under Article 2(2)(c),⁷⁷ three chose the option under Article 2(2)(b)⁷⁸ and twenty chose the option under Article 2(2)(a).⁷⁹

No later than two years after the Protocol entered into force, each party was required to apply appropriate national or international emissions standards to new stationary sources based on the 'best available technologies which are economically feasible' (BATEF), to apply national or international measures to products that contain solvents and to promote the use of labelling of products specifying their VOC content, taking into consideration Annex II. Within the same time frame, the parties were required to 'apply appropriate national or international emissions standards to new stationary sources based on best available technologies which are economically feasible, taking into consideration Annex II',⁸⁰ and encourage further public participation in emission control programmes, as well as the best use of all modes of transport and the promotion of traffic management schemes.⁸¹

No later than five years after the provision entered into force, in areas where international tropospheric ozone standards were exceeded or where transboundary fluxes originated or were expected to originate, each party was required to apply BATEF to existing stationary sources in major source categories, taking into consideration Annex II; each party also had to apply techniques to reduce VOC emissions from petrol distribution sources and motor vehicle refuelling operations, and to reduce the volatility of petrol, taking into consideration Annexes II and III.⁸² The Protocol requires that high priority be given to reducing and controlling emissions of substances with the greatest photochemical ozone creation potential, taking into consideration Annex IV, and that states ensure that in product-substitution measures they do not substitute toxic and carcinogenic VOCs and those that harm the stratospheric ozone layer for other VOCs.⁸³ This last provision amounts to an innovative requirement that an environmental and health assessment of substitute products be carried out.

Within six months of the Protocol entering into force, the parties were required to commence negotiations on further steps to reduce national annual emissions of VOCs or transboundary fluxes of such emissions and the resulting secondary photochemical oxidant products. Further emissions limits on VOCs, along with NO_x and sulphur dioxide, were included in the Gothenburg

⁷⁵ *Ibid.* ⁷⁶ Art. 2(2)(c). ⁷⁷ Bulgaria, Greece and Hungary.

⁷⁸ Canada (1988 as base year), Norway (1989 as base year) and Ukraine. ⁷⁹ See n. 73.

⁸⁰ Art. 2(3)(a)(i) and (ii). Annex II establishes Control Measures for Emissions of VOCs from Stationary Sources.

⁸¹ Art. 2(3)(a)(iii) and (iv). Annex III establishes control measures for Emissions of VOCs from on-road motor vehicles.

⁸² Art. 2(3)(b).

⁸³ Art. 2(4) and (5). Annex IV provides classification of VOCs based on their 'motorchemical ozone creation potential'.

Protocol. Parties were also required to: cooperate to develop, inter alia, control strategies; ensure cost-effectiveness, possibly through the use of economic instruments; and adopt measures and a timetable commencing no later than 1 January 2000 for achieving such reductions.⁸⁴ Parties were free to take more stringent measures, and were not relieved by the Protocol from obligations to reduce emissions that may contribute significantly to climate change, the formation of tropospheric background ozone or the depletion of stratospheric ozone, or that are toxic or carcinogenic.⁸⁵ The Protocol provides for the exchange of technology, research and monitoring, regular review and the establishment of national programmes, policies and strategies.⁸⁶ Implementation of the Protocol is verified by the exchange of information and annual reporting requirements, and by the Implementation Committee for the Convention's Protocols established in 1997.⁸⁷ Even so, there are continuing problems of non-compliance by some parties.⁸⁸

1994 Sulphur Protocol

Negotiations under the auspices of the 1985 Sulphur Protocol resulted in the conclusion of the 1994 Oslo Protocol on Further Reduction of Sulphur Emissions, which entered into force on 5 August 1998.⁸⁹ Like its predecessor, the 1994 Protocol contemplates future negotiations on further obligations to reduce sulphur emissions.⁹⁰ The 1994 Protocol applies and develops the concepts of 'critical loads' and the 'effects-based approach' introduced in the 1988 NO_x Protocol. The basic obligation to which the parties commit is to

control and reduce their sulphur emissions in order to protect human health and the environment from adverse effects, in particular acidifying effects, and to ensure, as far as possible, without entailing excessive costs, that depositions of oxidised sulphur compounds in the long term do not exceed critical loads for sulphur given, in Annex I, as critical sulphur depositions, in accordance with present scientific knowledge.⁹¹

The 'critical loads' for sulphur are intended as long-term targets for reductions in sulphur emissions, and it is recognised that they will not be reached in a single step. Instead, as a first step, parties are required to meet the targets and timetable for reductions of sulphur emissions specified in Annex II.⁹² In line with an effects-based approach, the emission reduction obligations of parties are differentiated, with greater emission reductions allocated to those countries where the overall benefit would be the greatest.

The Protocol requires the parties to make use of the 'most effective measures for the reduction of sulphur emissions' from new and existing sources, including controlling the sulphur content of fuel, energy efficient measures, promotion of renewable energy and the application of best available control technologies using the guidance provided in Annex IV to the Protocol.⁹³ The Protocol also permits the parties to apply economic instruments to encourage the adoption of

⁸⁴ Art. 2(6) and (7). ⁸⁵ Art. 3(1) and (2). ⁸⁶ Arts. 4 to 7. ⁸⁷ Arts. 3(3) and 8.

⁸⁸ For example, Spain has been non-compliant for over a decade, and does not expect to achieve compliance before 2020.

⁸⁹ Oslo, 14 June 1994, in force 5 August 1998, 33 ILM 1540 (1994); twenty-nine states are parties to the Protocol.

⁹⁰ Art. 2(8). ⁹¹ Art. 2(1).

⁹² Art. 2(2) and (3). The Annex was amended in December 2007 to specify emissions ceilings until 2010 and beyond.

⁹³ Art. 2(4).

cost-effective approaches to the reduction of sulphur emissions, and to enter into agreements for the joint implementation of the Protocol with other parties.⁹⁴

All parties (other than the United States and Canada) must apply national emissions limits to major new stationary sources, and were required to introduce pollution control measures for major existing stationary sources by 1 July 2004.⁹⁵ Parties were also required to apply national standards for the sulphur content of gas oil no later than two years after the Protocol entered into force.⁹⁶

Parties must implement their basic obligations under Article 2 through the adoption of national strategies, policies and programmes and by taking and applying national measures to control and reduce sulphur emissions.⁹⁷ Each party must collect and maintain information on actual levels of sulphur emissions, and of ambient concentrations and depositions of oxidised sulphur and other acidifying compounds; and on the effects of depositions of oxidised sulphur and other acidifying compounds.⁹⁸ The Protocol requires periodic reporting to the Executive Body on national implementation measures and the levels of national annual sulphur emissions.⁹⁹

The Protocol requires parties to facilitate the exchange of technologies and techniques for reducing sulphur emissions. The Protocol also encourages research, development, monitoring and cooperation in respect of various matters relating to: the harmonisation of methods for the establishment of critical loads; the improvement of monitoring techniques and modelling systems; the development of strategies for the further reduction of sulphur emissions; the understanding of the wider effects of sulphur emissions on human health and the environment; emissions abatement and energy efficiency technologies; and the economic evaluation of benefits for the environment and human health resulting from the reduction of sulphur emissions.¹⁰⁰

Like the other Protocols, the 1994 Sulphur Protocol makes use of the institutions established under the 1979 LRTAP Convention. Article 7 contemplates the establishment of an Implementation Committee to oversee compliance, which was set up by the Executive Body in 1997.¹⁰¹ In 1998, the parties to the 1994 Protocol decided that the structure, functions and procedures of the Implementation Committee should be those set out by Decision 1997/2 of the Executive Body.¹⁰² The Implementation Committee now oversees compliance with all of the Protocols to the LRTAP Convention.

1998 Aarhus Protocol on Heavy Metals

The 1998 Heavy Metals Protocol was adopted in Aarhus on 24 June 1998 and entered into force on 29 December 2003.¹⁰³ It targets three particularly harmful heavy metals – lead, cadmium and mercury – and requires parties to reduce their emissions of these metals below the levels in a selected reference year (between 1985 and 1995).¹⁰⁴ The Protocol aims to reduce emissions of heavy metals from industrial sources, combustion processes and waste incineration. Parties are required to implement emissions standards for these pollutants for stationary sources, based on

⁹⁴ Art. 2(6) and (7). ⁹⁵ Art. 2(5)(a) and (b); emissions limits are specified in Annex V. ⁹⁶ Art. 2(5)(c).

⁹⁷ Art. 4(1). ⁹⁸ Art. 4(2). ⁹⁹ Art. 5. ¹⁰⁰ Arts. 3 and 6. ¹⁰¹ Chapter 5, p. 172.

¹⁰² Decision 1998/6, The Application of the Compliance Procedure to the Oslo Protocol (ECE/EB.AIR/59, Annex II).

¹⁰³ Aarhus, 24 June 1998, 29 December 2003, 2237 UNTS 4; thirty-three states are parties to the Protocol.

¹⁰⁴ Art. 3(1) and Annex I.

the best available technologies suggested in the Protocol.¹⁰⁵ In addition, parties undertake to phase out the use of leaded petrol and to introduce measures designed to lower heavy metal emissions from other products.¹⁰⁶ A number of other product management measures are proposed for products containing mercury.¹⁰⁷

Parties are to develop strategies, policies and programmes, without undue delay, to discharge their obligations under the Protocol. A range of measures are suggested for this purpose, including economic instruments, government/industry covenants and voluntary agreements, more efficient use of resources, use of less polluting sources, development of a less polluting transport system, phasing out certain polluting industrial processes and developing cleaner processes. Parties are free to adopt more stringent measures than those required by the Protocol.¹⁰⁸ As for the other protocols, the Heavy Metals Protocol promotes technology exchange and other forms of cooperation between the parties.¹⁰⁹ Parties must report periodically to the Executive Body on measures taken to implement the Protocol, with compliance overseen by the Implementation Committee.¹¹⁰

In 2012, amendments to the Protocol were adopted to strengthen controls on heavy metal emissions and to introduce flexible transitional arrangements to facilitate the accession of new parties principally from Eastern Europe, the Caucasus and Central Asia.¹¹¹ The amendments have not yet entered into force; under Article 13(3) of the Protocol they require ratification by two-thirds of the parties to do so.

1998 Aarhus Protocol on Persistent Organic Pollutants

The Protocol on Persistent Organic Pollutants (POPs) was adopted by the Executive Body at the same time as the Heavy Metals Protocol and also came into force in 2003.¹¹² Its ultimate objective is to eliminate discharges, emissions and losses of POPs to the atmosphere. The Protocol focuses on a list of sixteen substances (including pesticides, industrial chemicals and contaminants) singled out according to agreed risk criteria.¹¹³ Parties to the Protocol undertake to eliminate the production and use of certain POPs listed in Annex I and to restrict the use of other substances listed in Annex II.¹¹⁴ For a third group of POPs listed in Annex III, parties are required to reduce their emissions of these substances from the level of emissions in a given reference year (between 1985 and 1995).¹¹⁵ For emissions of dioxins and furans, parties are required to apply emissions limits, based on best available technologies, for new and existing stationary sources, and must take effective measures to control emissions of POPs from mobile sources.¹¹⁶

¹⁰⁵ Art. 3(2) and Annex III. In December 2012, the parties to the Protocol adopted Decision 2012/6 to update the guidance on best available technologies specified in Annex III. This amendment entered into force on 9 January 2014.

¹⁰⁶ Art. 3(3) and Annex VI. ¹⁰⁷ Art. 3(4) and Annex VII. ¹⁰⁸ Art. 5. ¹⁰⁹ Arts. 4 and 6. ¹¹⁰ Arts. 7 and 9.

¹¹¹ Decision 2012/5, Amendment to the text and annexes other than III and VII to the 1998 Protocol on Heavy Metals, ECE/EB.AIR/113/Add. 1, Art. 3*bis* and Annex V.

¹¹² Aarhus, 24 June 1998, 23 October 2003, 2230 UNTS 79; thirty-three states are parties to the Protocol.

¹¹³ On 18 December 2009, parties amended the Protocol and its Annexes to include seven new substances: Decisions 2009/1, 2009/2 and 2009/3 (not yet in force), 27th Session of the Executive Body, Geneva, Switzerland, 18 December 2009, C.N.555.2010.TREATIES-3; C.N.556.2010.TREATIES-4; C.N.554.2010.TREATIES-2.

¹¹⁴ Art. 3(1). Parties may grant exemptions from these requirements for research purposes or in the event of a public health emergency: see Art. 4.

¹¹⁵ Art. 3(5)(a).

¹¹⁶ Art. 3(5)(b) and Annexes IV and V. Decisions 2009/3 and 2009/4 adopted in 2009 by the parties updated guidance on best available technologies to control emissions of POPs in Annex V and to turn parts of it into a guidance document as contained in Annex VII. These amendments entered into force on 13 December 2010.

The Protocol includes provisions dealing with the disposal of wastes containing or generated from listed substances.¹¹⁷ Parties are to ensure the environmentally sound destruction and disposal of these wastes. For Annex I substances, domestic disposal should take place where possible, and any transboundary movement of these wastes should be in accordance with applicable subregional, regional and global regimes governing the transboundary movement of hazardous wastes, in particular the 1989 Basel Convention. Parties are to: develop strategies, policies and programmes to discharge their obligations under the Protocol; promote the provision of information to the general public, including individuals who are direct users of POPs; facilitate the exchange of technology and information; and engage in cooperative research, development and monitoring in relation to POPs.¹¹⁸ Parties must report periodically to the Executive Body on measures taken to implement the Protocol, with compliance overseen by the Implementation Committee.¹¹⁹

1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone

The last Protocol to the LRTAP Convention is the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone, adopted by the Executive Body on 30 November 1999.¹²⁰ The Protocol's objective is to control and reduce anthropogenic emissions of four pollutants – sulphur, NO_x, ammonia and VOCs – which are likely to cause adverse effects on human health, natural ecosystems, materials and crops due to acidification, eutrophication or ground-level ozone.¹²¹ Following full implementation of the Protocol, it is estimated that the area of Europe suffering from excessive levels of acidification will shrink from 93 million hectares (measured in 1990) to 15 million hectares. Similarly, excessive levels of eutrophication are expected to fall from 165 million hectares (in 1990) to 108 million hectares and the number of days with excessive ozone levels to be halved.

The Protocol builds on the previous sulphur, NO_x and VOC Protocols, employing a range of mechanisms to reduce atmospheric emissions of the four types of pollutants. On a long-term stepwise basis, the parties commit to ensuring that atmospheric depositions or concentrations of the pollutants do not exceed the critical loads of acidity, nutrient nitrogen and ozone specified in Annex I to the Protocol.¹²² Annex II sets emissions ceilings for sulphur, NO_x, VOCs and ammonia which parties were required to attain by 2010. Required emissions reductions are differentiated between the parties on the basis that parties whose emissions have more severe environmental or health impacts and which are relatively inexpensive to reduce will be required to make the largest cuts. In addition, the Protocol sets tight limit values for specific emission sources, fuels and new mobile sources, and requires the best available technologies to be used to minimise emissions.¹²³ Guidance documents adopted together with the Protocol provide details of a wide range of abatement techniques and economic instruments for the reduction of emissions in relevant sectors, including the transport sector.¹²⁴

¹¹⁷ Art. 3(1) and (3). ¹¹⁸ Arts. 5–8. ¹¹⁹ Arts. 9 and 11.

¹²⁰ Gothenburg (Sweden), 30 November 1999, in force 17 May 2005, UN Doc. EB.AIR/1999; twenty-six states are parties to the Protocol.

¹²¹ Art. 2. ¹²² *Ibid.* ¹²³ Art. 3(2)–(6).

¹²⁴ Decision 1999/1, The Guidance Documents for the Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone (ECE/EB.AIR/68, Annex I), as amended. The latest versions of the Guidance Documents can be viewed at www.uncece.org/environmental-policy/conventions/air/guidance-documents-and-other-methodological-materials/gothenburg-protocol.html

The Protocol is the first agreement under the Convention to deal specifically with emissions of reduced nitrogen compounds (ammonia), which are particularly associated with farming activities. Parties are required to: apply ammonia control measures, including developing advisory codes of good agricultural practice to control ammonia emissions; take such steps as are feasible to limit ammonia emissions from the use of solid fertilisers based on urea; and implement control measures with respect to manure application and storage, and animal housing.¹²⁵ A Guidance Document adopted in 2007 provides guidance to parties in identifying ammonia control options and techniques for reducing emissions from agricultural and other stationary sources.¹²⁶

Once again, parties are required: to develop strategies, policies and programmes to discharge their obligations under the Protocol; to promote the provision of information to the general public; to facilitate the exchange of technology and information; and to engage in cooperative research, development and monitoring.¹²⁷ Parties must report periodically to the Executive Body on measures taken to implement the Protocol, with compliance overseen by the Implementation Committee.¹²⁸

In 2012, parties concluded negotiations for significant revision of the 1999 Gothenburg Protocol.¹²⁹ The revised Protocol (not yet in force) addresses additional aspects such as fine particulate matter, black carbon (a potent contributor to global warming) and intercontinental transport of air pollution. It also contains updated sets of emission limit values for stationary and mobile sources that will place obligations on parties for the period up to 2020 and beyond. The revised Protocol is intended, over time, to replace previous separate protocols with a new multi-pollutant instrument. Accordingly, the revised Protocol provides for the termination of the two previous sulphur protocols, the NO_x Protocol and the VOC Protocol where all parties to those protocols have become parties to the revised Gothenburg Protocol.¹³⁰

The 1999 Gothenburg Protocol illustrates the extent to which the LRTAP regime has evolved and gained sophistication over time. Compared with the early LRTAP Protocols, which focused on single pollutants and a single problem (acid rain), the 1999 Gothenburg Protocol targets multiple substances and their broad-ranging environmental effects. In addition, the 'critical loads' approach adopted in Protocols since the 1994 Sulphur Protocol allows for the tailoring of emission reduction targets in accordance with the ecological vulnerability of different regions. These innovations pave the way for a more integrated, and potentially more effective, approach to managing and controlling the environmental impacts of air pollution.

1991 Canada–US Air Quality Agreement

During the 1970s, transboundary air pollution emerged as a significant environmental issue in North America as well as in Europe. Both the US and Canada are parties to the LRTAP Convention and its Protocols. However, the countries also agreed to bilateral arrangements to

¹²⁵ Art. 3(8) and Annex IX.

¹²⁶ Guidance Document on Control Techniques for Preventing and Abating Emissions of Ammonia, ECE/EB.AIR/WG.5/2007/13, 16 July 2007, as amended.

¹²⁷ Arts. 4–6 and 8. ¹²⁸ Arts. 7 and 9.

¹²⁹ ECE, 1999 Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone to the Convention on Long Range Transboundary Air Pollution, as amended on 4 May 2012, ECE/EB.AIR/114, 6 May 2013, available at www.unece.org/fileadmin/DAM/env/documents/2013/air/eb/ECE.EB.AIR.114_ENG.pdf

¹³⁰ *Ibid.*, Art. 18*bis*.

address air pollution issues arising from emissions of sulphur dioxide and nitrogen oxides. The 1991 Agreement Between the United States of America and Canada on Air Quality (1991 Canada–US Air Quality Agreement)¹³¹ is designed to control transboundary air pollution between the two countries and to provide a framework for addressing shared concerns.¹³² The Agreement followed disputes over responsibility for causing acid rain, an issue that dates back at least to the 1930s and the differences over the sulphur emissions from the Trail Smelter.¹³³ At the heart of the Agreement are air quality objectives to limit and reduce emissions of sulphur dioxide and nitrogen oxides and to prevent air quality deterioration and work towards visibility protection.¹³⁴ The 1991 Agreement also requires compliance monitoring by continuous emissions monitoring systems or their equivalent for certain utilities and comparably effective methods of emissions estimation from other major stationary sources.¹³⁵ The Agreement resulted in reductions in acid rain in North America during the 1990s. In December 2000, the parties concluded negotiations for an Ozone Annex to the Agreement to reduce transboundary flows of ground-level ozone, one of the main contributors to smog, and are currently considering an additional Annex to control particulate matter emissions.¹³⁶

Sulphur Dioxide

Under the Agreement, the United States was obliged to reduce its annual sulphur dioxide emissions by approximately 10 million tonnes from 1980 levels by the year 2000, in accordance with its own national legislation (1990 Clean Air Act), to achieve a permanent national emissions cap of 8.95 million tonnes of sulphur dioxide per year for electric utilities by 2010. It must also adopt new or revised standards as the Administrator of the Environmental Protection Agency deems appropriate, aimed at limiting sulphur dioxide emissions from industrial sources in the event that they may be expected to exceed 5.6 million tonnes per year.¹³⁷ For its part, Canada agreed to reduce sulphur dioxide emissions in its seven easternmost provinces to 2.3 million tonnes per year by 1994 and to establish a cap on emissions from those provinces of 2.3 million tonnes per year from 1995 to 31 December 1999, and a permanent national emissions cap of 3.2 million tonnes per year by 2000.¹³⁸ As of 2011, the US national acid rain programme had reduced emissions of sulphur dioxide 71 per cent from 1990 levels. In Canada, emissions of sulphur dioxide over the same period more than halved.¹³⁹

Nitrogen Oxides

The United States committed to reduce the total annual emissions of nitrogen oxides by approximately 2 million tonnes from 1980 emissions levels by 2000. This is to be achieved through controls on stationary sources (establishing emissions standards for electric utility

¹³¹ Ottawa, 13 March 1991, in force 13 March 1991, 30 ILM 676 (1991).

¹³² Arts. II and III(1). 'Air pollution' is defined in similar terms to the definition in the 1979 LRTAP Convention except for the exclusion of 'energy' (Art. I(1)).

¹³³ E. G. Lee, 'International Law and the Canada–United States Acid Rain Dispute', in D. Magraw (ed.), *International Law and Pollution* (Philadelphia, PA: University of Pennsylvania Press, 1991), 322.

¹³⁴ Art. IV(2) and Annex I, Section 4. ¹³⁵ Annex I, Section 3.

¹³⁶ Canada–United States Air Quality Agreement Progress Report, 2012, Section 4: Fourth Five-year Review and 20-year Retrospective of the United States–Canada Air Quality Agreement, at www.ec.gc.ca/air/default.asp?lang=En&ftn=8ABC14B4-1&offset=5&ttoc=hide

¹³⁷ Annex I, Section 1A. ¹³⁸ Annex I, Section 1B. 1 ton = 0.91 tonnes (metric tons).

¹³⁹ Canada–United States Air Quality Agreement Progress Report, 2012, Section 4.

boilers) and mobile sources (emissions standards from old and new light duty trucks, light duty vehicles and heavy duty trucks).¹⁴⁰ Canada agreed as an interim requirement to reduce by the year 2000 annual national emissions from stationary sources by 100,000 tonnes below its forecast level of 970,000 tonnes for the year 2000, to develop by 1 January 1995 further national annual emissions reduction requirements from stationary sources to be achieved by 2000 and/or 2005, and to limit emissions from mobile sources by adopting specified emissions standards (for light, medium and heavy duty vehicles).¹⁴¹ As of 2011 in the United States, power plant emissions of nitrogen oxides had decreased by 69 per cent from 1990 levels. In Canada, total emissions of nitrogen oxides from power plants and transportation decreased by 18 per cent between 1990 and 2010.¹⁴²

Ozone

The long-term goal of the parties pursuant to the 2000 Ozone Annex is to reduce emissions of nitrogen oxides and VOCs in designated 'Pollution Emission Management Areas' (PEMAs) in order to attain ozone air quality standards in both countries.¹⁴³ In the case of the US, these standards are the National Ambient Air Quality Standards for Ozone, established under the 1990 Clean Air Act. For Canada, the relevant standard is the Canada-wide Standard for Ozone agreed between the Canadian federal and provincial governments. The parties are permitted to take more stringent measures than those specified in the agreement to achieve reductions. The Ozone Annex envisaged attainment of the ozone air quality standards by 2010, with estimated annual NO_x reductions for Canada of 44 per cent from 1990 levels and 20 per cent reductions from 1990 levels for VOC emissions.¹⁴⁴ In the case of the US, the equivalent estimated emission reductions were 36 per cent from 1990 levels for NO_x and 38 per cent from 1990 levels for VOCs.¹⁴⁵ These standards have largely been met or exceeded: in the Canadian PEMA, for example, NO_x emissions were reduced 40 per cent and VOCs 30 per cent; in the US PEMA NO_x emissions were reduced 42 per cent and VOCs 37 per cent.¹⁴⁶ Under the Agreement, the parties also agreed to assess progress in implementation in 2004 with a view to negotiating further reductions.¹⁴⁷

Assessment, Information and Institutions

The 1991 Agreement requires assessment of proposed activities likely to cause significant transboundary air pollution, notification and consultation, and measures must be taken to avoid or mitigate the risks posed by actions likely to cause significant transboundary air pollution.¹⁴⁸ It also provides for research, the exchange of information, and other consultations.¹⁴⁹ A bilateral Air Quality Committee was established to prepare progress reports on a biennial basis,¹⁵⁰ and the International Joint Commission assists the parties in implementation, by receiving public comments and dealing with other requests from the parties.¹⁵¹ In an innovative provision, the

¹⁴⁰ Annex I, Section 2A. ¹⁴¹ Annex I, Section 2B.

¹⁴² See Canada–United States Air Quality Agreement Progress Report, 2012, Section 4. ¹⁴³ Part I. ¹⁴⁴ Part IV.A.

¹⁴⁵ Part IV.B. ¹⁴⁶ See Canada–United States Air Quality Agreement Progress Report, 2012, Section 4.

¹⁴⁷ Part IV.A. ¹⁴⁸ Art. V. ¹⁴⁹ Arts. VI, VII and XI and Annex 2.

¹⁵⁰ Progress reports are available online from www.epa.gov/airmarkets/programs/us-canada.html. The most recent progress report was released in 2014.

¹⁵¹ Arts. VIII and IX.

Agreement envisages a role for the public and interested organisations in assessing reports and implementing the Agreement.¹⁵²

2002 ASEAN Agreement on Transboundary Haze Pollution

In response to concerns over widespread haze caused particularly by Indonesian forest fires in the late 1990s, the governments of the ASEAN countries signed an Agreement on Transboundary Haze Pollution in June 2002, which came into force on 25 November 2003.¹⁵³ Indonesia – under pressure from other countries in the region – eventually ratified the Agreement in 2014.¹⁵⁴

The objective of the Agreement is ‘to prevent and monitor transboundary haze pollution as a result of land and/or forest fires which should be mitigated, through concerted national efforts and intensified regional and international cooperation’, an objective to be ‘pursued in the overall context of sustainable development’.¹⁵⁵ As in the Climate Change Convention (see Chapter 8), this objective is augmented by the elaboration of several ‘principles’ that include a restatement of Principle 2 of the Rio Declaration, a requirement to take precautionary measures ‘[w]here there are threats of serious or irreversible damage from transboundary haze pollution, even without full scientific certainty’, a commitment to manage natural resources including land and forest resources in an ecologically sound and sustainable manner, and the principle that the parties in addressing transboundary haze pollution should involve ‘all stakeholders’, including local communities, NGOs, farmers and business.¹⁵⁶ The Agreement defines ‘haze pollution’ as meaning ‘smoke resulting from land and/or forest fire which causes deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment’.¹⁵⁷

Under the Agreement, parties agree to cooperate and take legal, administrative or other measures to implement their obligations regarding: the development and implementation of measures to prevent, monitor and mitigate transboundary haze pollution by controlling sources of land and forest fires; development of monitoring, assessment and early warning systems; exchange of information and technology; and provision of mutual assistance.¹⁵⁸ Parties are also required to respond promptly to any request for information sought by states that are or may be affected by transboundary haze pollution, with a view to minimising adverse effects.¹⁵⁹ Specific obligations are established in respect of monitoring,¹⁶⁰ provision of data,¹⁶¹ preparedness and the preparation of response plans,¹⁶² technical cooperation,¹⁶³ scientific research¹⁶⁴ and activities to prevent haze pollution.¹⁶⁵ The measures parties must take in respect of the latter include developing and implementing legislative and other regulatory measures, programmes and strategies to promote a ‘zero burning policy’; developing other appropriate policies to curb activities that may lead to land and/or forest fires; identifying and monitoring areas prone to occurrence of land and/or forest fires; strengthening local fire management and firefighting

¹⁵² Art. XIV(3).

¹⁵³ ASEAN Agreement on Transboundary Haze Pollution, Kuala Lumpur, Malaysia, 10 May 2002, in force 25 November 2003; <http://haze.asean.org/hazeagreement>

¹⁵⁴ ASEAN, Indonesia Deposits Instrument of Ratification of the ASEAN Agreement on Transboundary Haze Pollution, 20 January 2015, at www.asean.org/news/asean-secretariat-news/item/indonesia-deposits-instrument-of-ratification-of-the-asean-agreement-on-transboundary-haze-pollution

¹⁵⁵ Art. 2. ¹⁵⁶ Art. 3. ¹⁵⁷ Art. 1(6). ¹⁵⁸ Art. 4(1) and (3). ¹⁵⁹ Art. 4(2). ¹⁶⁰ Art. 7. ¹⁶¹ Art. 8.

¹⁶² Art. 10. ¹⁶³ Art. 16. ¹⁶⁴ Art. 17. ¹⁶⁵ Art. 9.

capability and coordination to prevent the occurrence of land and/or forest fires; promoting public education and awareness-building campaigns and strengthening community participation in fire management; promoting and utilising indigenous knowledge and practices in fire prevention and management; and ensuring that legislative, administrative and/or other relevant measures are taken to control open burning and to prevent land clearing using fire.

The Agreement is implemented under the auspices of the Conference of the Parties, assisted by a secretariat. The Agreement establishes an ASEAN Coordinating Centre for Transboundary Haze Pollution Control to facilitate cooperation and coordination in assessing and managing the impact of land and forest fires, particularly the haze pollution arising from such fires.¹⁶⁶ In the case of an emergency situation, the Centre may also provide assistance, including through coordinating the provision of assistance by other parties to the Agreement.¹⁶⁷

Aircraft Emissions: ICAO Convention

Aircraft emissions make a significant contribution to global atmospheric problems, including climate change.¹⁶⁸ Annex 16 to the 1944 Convention on International Civil Aviation (ICAO Convention)¹⁶⁹ establishes rules on 'Aircraft Engine Emissions' (1980 ICAO Aircraft Emissions Standards and Recommended Practices).¹⁷⁰ The Standards were adopted by the ICAO Council in 1980, following proposals to develop Standards and Recommended Practices to achieve 'maximum compatibility between the safe and orderly development of civil aviation and the quality of human environment'.¹⁷¹ The 1980 ICAO Aircraft Emissions Standards and Recommended Practices were adopted under Article 37 of the ICAO Convention, which requires contracting states

to collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures and organisation . . . in all matters in which such uniformity will facilitate and improve air navigation.

Where a state finds it 'impracticable' to comply with an international standard, it must, under Article 38, immediately notify the ICAO of the differences between its own practices and those established by the international standard. The Emissions Standards establish rules for vented fuel (Part II) and emissions centrifugation (Part III), including emissions limits for smoke, hydrocarbons, carbon monoxide and oxides of nitrogens for subsonic and supersonic

¹⁶⁶ Art. 5. ¹⁶⁷ See Arts. 12–15.

¹⁶⁸ See the *Special Report on Aviation and the Global Atmosphere* (1999) prepared at the ICAO's request by the IPCC in collaboration with the Scientific Assessment Panel to the Montreal Protocol (available at www.grida.no/climate/ipcc/aviation/index.htm). At the request of the ICAO, the findings of this report were updated in the IPCC's 2007 Assessment Report: IPCC, *Climate Change 2007 – Impacts, Adaptation and Vulnerability* (2007). ICAO also participated in the IPCC process for the 2014 Assessment Report to ensure coverage of scientific understanding of aviation's impacts on global climate.

¹⁶⁹ 7 December 1944, in force 4 April 1947, 15 UNTS 295.

¹⁷⁰ ICAO, *International Standards and Recommended Practices, Environmental Protection, Annex 16 to the 1944 ICAO Convention*, vol. II (2008, 3rd edn), incorporating Amendments 1–6. A 'Consolidated Statement of Continuing Policies and Practices Related to Environmental Protection' is revised and updated by the ICAO Council every three years for adoption by the ICAO Assembly. The present version, updated by Assembly Res. A38–17 and Res. A38–18, was adopted in 2013.

¹⁷¹ ICAO Assembly Res. A18–11, para. 2.

aircraft,¹⁷² and standard techniques for measurement and evaluation, and compliance procedures.¹⁷³ ICAO has also addressed the impacts of the aviation industry on climate change, albeit in a limited way, with adoption of a global ‘Carbon Offsetting and Reduction Scheme for International Aviation’.¹⁷⁴

2013 Minamata Mercury Convention

Efforts to address pollution from heavy metals including mercury under the 1988 Aarhus Heavy Metals Protocol to the LRTAP Convention were the progenitor for the United Nations Minamata Convention on Mercury concluded in January 2013.¹⁷⁵ The objective of the Minamata Mercury Convention is ‘to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds’.¹⁷⁶ The treaty is not yet in force, requiring fifty ratifications from states in order to be so.¹⁷⁷

In addition to introducing controls on mercury mines, trade in mercury and mercury products, and disposal of mercury waste,¹⁷⁸ the Convention includes a provision on controlling and reducing atmospheric emissions of mercury and mercury compounds.¹⁷⁹ As mercury pollution is a by-product of fossil fuel combustion, for example, in coal-fired power plants, implementation of these requirements will also make an important contribution to combating climate change.

Under Article 8 of the Convention, control measures are required for emissions from point sources falling within the source categories listed in Annex D; namely coal-fired power plants, coal-fired industrial boilers, smelting and roasting processes used in the production of non-ferrous metals such as lead, zinc, copper and industrial gold, waste incineration facilities, and cement clinker production facilities. Article 8(3) requires parties with these sources to prepare a national plan setting out the measures to be taken to control emissions and the expected targets, goals and outcomes, within four years of the entry into force of the Convention. For new sources, parties – within five years of the treaty entering into force – must require the use of best available techniques (which may include emission limit values) and best environmental practices to control and, where feasible, reduce emissions.¹⁸⁰ Parties are also required to take measures in respect of existing sources of mercury emissions within a ten-year time frame in order to achieve ‘reasonable progress’ in reducing emissions over time.¹⁸¹ In this regard the treaty allows states significant flexibility to select measures from a specified menu of options on the basis of their

¹⁷² Sections 2.2, 2.3, 3.2 and 3.3. In February 2010, agreement was reached on a new NO_x Standard, which improves on the previous Standard by up to 15 per cent with an effective date of 31 December 2013, as well as a production cut-off of engines according to the previous Standard with an effective date of 31 December 2012. The same meeting called for establishment of a certification standard for non-volatile particulate matter by 2016.

¹⁷³ Appendix 6. ¹⁷⁴ ICAO Assembly Res. A39-3. See further, Chapter 8, pp. 332–3.

¹⁷⁵ Minamata Convention on Mercury, adopted 10 January 2013, Minamata, Japan; the text of the Convention is available at www.mercuryconvention.org

¹⁷⁶ Article 1.

¹⁷⁷ Article 31. As of 13 May 2015, the Convention has received twelve ratifications, including that of the United States.

¹⁷⁸ These aspects of the Convention are discussed in depth in Chapter 12, pp. 606–7. ¹⁷⁹ Article 8.

¹⁸⁰ Art. 8(4). At its first meeting, the Conference of the Parties is instructed to adopt guidance on best available techniques and best environmental practices, taking into account any difference between new and existing sources and the need to minimise cross-media effects (Art. 8(8)(a)).

¹⁸¹ Art. 8(6).

own national circumstances, and the economic and technical feasibility and affordability of different measures. Options available to parties will include:

- (a) a quantified goal for controlling and, where feasible, reducing emissions from relevant sources;
- (b) emission limit values for controlling and, where feasible, reducing emissions from relevant sources;
- (c) the use of best available techniques and best environmental practices to control emissions from relevant sources;
- (d) a multi-pollutant control strategy that would deliver co-benefits for control of mercury emissions; and
- (e) alternative measures to reduce emissions from relevant sources.¹⁸²

Parties are also permitted to apply the same measures to all existing sources or to adopt different measures in respect of different source categories.¹⁸³ To assist with implementation and monitoring of these obligations, parties are required to establish – at latest within five years after the Convention enters into force – an inventory of mercury emissions from relevant sources.¹⁸⁴

OZONE DEPLETION

The ozone layer comprises a thin film of O₃ molecules (ozone) that are found in the Earth's atmosphere. Ninety per cent of atmospheric O₃ is found in the stratosphere, with maximum concentrations occurring at altitudes of 25 km over the equator and 15 km over the poles. The ozone layer is thought to provide a shield against harmful exposure to ultraviolet radiation from the sun and to control the temperature structure of the stratosphere. Ozone also acts as a greenhouse gas at lower altitude, is a respiratory irritant, and can adversely affect plant growth.¹⁸⁵ Since the 1960s, there have been losses in the ozone layer over the Antarctic during the southern hemisphere spring (September–October), often referred to as a 'hole' in the ozone layer. Significant thinning has also been detected in the northern hemisphere, and ozone depletion became progressively greater over the course of the 1990s. Serious levels of ultraviolet B (UVB) radiation have been observed over Antarctica, Australia and mountainous regions of Europe, and damage to phytoplankton has been discovered in Antarctica.¹⁸⁶

The depletion of the ozone layer is caused by the anthropogenic emission of certain inert gases, particularly chlorofluorocarbons (CFCs) and halons. When these gases reach the ozone layer, they are exposed to ultraviolet rays and break down, releasing free chlorine (from CFCs) and bromine (from halons), which break up the ozone molecules, and thus 'deplete' the ozone layer. Increased levels of ultraviolet rays are thought to cause harm to human health and the environment, including organisms in the marine environment. CFCs have been used extensively

¹⁸² Art. 8(5). ¹⁸³ Art. 8(6). ¹⁸⁴ Art. 8(7).

¹⁸⁵ UNEP, *Environmental Data Report* (1991), 9. The GEO Data Portal is now the authoritative source for data sets used by UNEP. Its online database can be accessed at <http://geodata.grid.unep.ch>

¹⁸⁶ Statement from the Co-Chair of the Ozone Scientific Assessment Panel and Chair of the Assessment Panels, Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992, 5–6. For the latest assessment of ozone depletion, see World Meteorological Organization/United Nations Environment Programme, *Scientific Assessment of Ozone Depletion: 2014*, Global Ozone Research and Monitoring Project, Report No. 55 (2014).

as refrigerants, air conditioner coolants, aerosol spray-can ingredients and in the manufacture of styrofoam.

The protection of the ozone layer from these destructive elements is the subject of a complex legal regime comprising the 1985 Vienna Convention for the Protection of the Ozone Layer (the 1985 Vienna Convention)¹⁸⁷ and the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer (the 1987 Montreal Protocol).¹⁸⁸ Both treaties have received universal ratification, the first treaties in the history of the United Nations to do so. Since 1990, there have been various adjustments to the production and consumption of controlled substances listed in the Annexes to the Protocol¹⁸⁹ and five amendments to the Protocol, adopted in London (1990),¹⁹⁰ Copenhagen (1992),¹⁹¹ Montreal (1997);¹⁹² Beijing (1999);¹⁹³ and Kigali (2016).¹⁹⁴ The adjustment mechanism, in particular, has lent a significant degree of flexibility to the Protocol's provisions allowing it to adapt better to changing scientific knowledge and technological development.

Since the 1960s, monitoring functions have been carried out by states individually and jointly, as well as under the World Meteorological Organization's (WMO) Global Ozone Observing System. In 2002, evidence began to emerge to suggest that the global regime was limiting the rate of increase in the degradation of the ozone layer, and that within five years the size of the hole in the ozone layer over the Antarctic might begin to decrease in magnitude, following a reduction in the levels of ozone-depleting gases in the stratosphere and of ozone-depleting chemicals in the troposphere.¹⁹⁵ If compliance with the Montreal Protocol is maintained, scientists predict that by 2050 the abundance of ozone-depleting gases should fall to values below those present before the Antarctic ozone hole began to form in the early 1980s.¹⁹⁶ For this reason, the international ozone regime is often hailed as an example of 'successful'

¹⁸⁷ Vienna, 22 March 1985, in force 22 September 1988, 26 ILM 1529 (1987); 196 states and one regional economic organisation are parties to the Convention.

¹⁸⁸ Montreal, 16 September 1987, in force 1 January 1989, 26 ILM 1550 (1987); 196 states and one regional economic organisation are parties to the Protocol.

¹⁸⁹ Adjustments to the Protocol were adopted, in accordance with the procedure laid down in Art. 2(9), at the Second, Fourth, Seventh, Ninth, Eleventh and Nineteenth Meetings of the Parties to the Protocol and came into force for all parties on 7 March 1991, 23 September 1993, 5 August 1996, 4 June 1998, 28 July 2000 and 14 May 2008, respectively.

¹⁹⁰ London, 29 June 1990, in force 10 August 1992, 30 ILM 537 (1991); 196 states and one regional economic organisation are parties to the 1990 Amendments.

¹⁹¹ Copenhagen, 25 November 1992, 14 June 1994, 32 ILM 874 (1993); 196 states and one regional economic organisation are parties to the 1992 Amendments; see Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992, Annexes I-III.

¹⁹² Montreal, 25 September 1997, in force 10 November 1999; 196 states and one regional economic organisation are parties to the 1997 Amendments; Annex IV of the Report of the Ninth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.9/12.

¹⁹³ Beijing, 17 December 1999, in force 25 February 2002; 196 states and one regional economic organisation are parties to the 1999 Amendments; Annex V of the Report of the Eleventh Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.11/10.

¹⁹⁴ Kigali, 15 October 2016, not yet in force; Decision XXVIII/1, Further Amendment of the Montreal Protocol, UNEP/OzL.Pro.28/12, Annex I. The Amendment shall enter into force on 1 January 2019, provided that at least twenty instruments of ratification, acceptance or approval of the Amendment have been deposited by states or regional economic integration organisations that are Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. In the event that this condition has not been fulfilled by that date, the Amendment shall enter into force on the ninetieth day following the date on which it has been fulfilled (Art. IV).

¹⁹⁵ UNEP Press Release, 16 September 2002.

¹⁹⁶ WMO, *Scientific Assessment of Ozone Depletion: 2006*, Global Ozone Research and Monitoring Project, Report No. 50 (2007), 6. See also WMO/UNEP, *Scientific Assessment of Ozone Depletion: 2014*, Global Ozone Research and Monitoring Project, Report No. 55 (2014).

environmental regulation.¹⁹⁷ The recent Kigali amendment to the Protocol – agreeing on reductions in emissions of hydrofluorocarbons, which are both an ozone depleting substance and a powerful greenhouse gas – reinforces this view.

1985 Vienna Convention

The Vienna Convention was negotiated over five years under the auspices of UNEP. It was the first treaty to address a global atmospheric issue and is open to participation by all states. It has since attracted universal support from all industrialised nations and developing countries.¹⁹⁸ The Convention established a framework for the adoption of measures ‘to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer’.¹⁹⁹ The Vienna Convention does not set targets or timetables for action but requires several categories of ‘appropriate measures’ to be taken by parties in accordance with the means at their disposal and their capabilities, and on the basis of relevant scientific and technical considerations.²⁰⁰ These obligations are: cooperation on systematic observations, research and information exchange; the adoption of appropriate legislative or administrative measures and cooperation on policies to control, limit, reduce or prevent activities that are likely to have adverse effects resulting from modifications to the ozone layer; and cooperation in the formulation of measures, procedures and standards to implement the Convention as well as with competent international bodies.²⁰¹ Parties are free to adopt additional domestic measures, in accordance with international law, and maintain in force compatible measures already taken.²⁰²

Article 3 and Annexes I and II elaborate upon the type of research and systematic observations which are to be carried out directly or through international bodies.²⁰³ Article 4 and Annex II require cooperation in legal, scientific and technical fields, including the exchange of scientific, technical, socio-economic and legal information relevant to the Convention, subject to rules of confidentiality, and the development and transfer of technology and knowledge, taking into account the particular needs of developing countries.

The parties transmit information to the Conference of the Parties on their implementation measures. That body is entrusted with the implementation of the Convention, assisted by a secretariat whose services are provided by UNEP.²⁰⁴ The Conference of the Parties has other functions, including the adoption of protocols, additional annexes and amendments to protocols and annexes, and the right to take ‘any additional action that may be required for the achievement of the purposes of the Convention’.²⁰⁵ Annexes to the Convention or to any protocols are

¹⁹⁷ UNEP, *Handbook for the Montreal Protocol on Substances That Deplete the Ozone Layer* (2012, 9th edn) as updated online, foreword.

¹⁹⁸ Universal participation was achieved on 16 September 2009 with 196 states and the European Union as parties.

¹⁹⁹ Art. 2(1); the ‘ozone layer’ is defined as ‘the layer of atmospheric ozone above the planetary boundary layer’ (Art. 1(1)).

²⁰⁰ Art. 2(1), (2) and (4). ²⁰¹ Art. 2(2)(a)–(d). ²⁰² Art. 2(3).

²⁰³ Annex I identifies three main areas of research need (the physics and chemistry of the atmosphere; health, biological and photodegradation effects; effects on climate) and systematic observations on designated matters. Annex I also identifies substances thought at the time to have the potential to modify the ozone layer: carbon substances (carbon monoxide, carbon dioxide, methane, non-methane hydrocarbon species); nitrogen substances (nitrous oxide, nitrogen oxides); chlorine substances (fully halogenated alkanes, partially halogenated alkanes); bromide substances; and hydrogen substances (hydrogen, water).

²⁰⁴ Arts. 5 to 7. ²⁰⁵ Arts. 6(4), 8, 9 and 10.

restricted to scientific, technical and administrative matters, and are to be considered an integral part of the Convention or of such protocols,²⁰⁶ and only parties to the Convention may become parties to any protocol.²⁰⁷

The 1987 Montreal Protocol: Adjustments and Amendments

The first, and to date the only, Protocol to the Vienna Convention is the 1987 Montreal Protocol. It is a landmark international environmental agreement, providing a precedent for new regulatory techniques and institutional arrangements, and the adoption and implementation of innovative financial mechanisms. With hindsight, the Montreal Protocol appears to be a relatively straightforward instrument, and the fact that its approach has subsequently been relied upon extensively in other international environmental negotiations belies the controversy and complexity surrounding it at the time of its negotiations. According to one commentator, most observers in and out of government believed at the time that an agreement on international regulation of CFCs would be impossible to reach. The issues were complex, involving interconnected scientific, economic, technological and political variables. The science was still speculative, resting on projections from evolving computer models of imperfectly understood stratospheric processes – models that yielded varying, sometimes contradictory, predictions of potential future ozone losses each time they were further refined. Moreover, existing measurements of the ozone layer showed no depletion, nor was there any evidence of the postulated harmful effects.²⁰⁸

The Montreal Protocol sets forth specific legal obligations, including limitations and reductions on the calculated levels of consumption and production of certain controlled ozone-depleting substances.²⁰⁹ Its negotiation and conclusion, shortly after the 1985 Vienna Convention, were prompted by new scientific evidence indicating that emissions of certain substances were significantly depleting and modifying the ozone layer and would have potential climatic effects.²¹⁰ The absence of scientific evidence that actual harm was occurring required the international community to take ‘precautionary measures to control equitably total global emissions’ of substances that deplete the ozone layer.²¹¹ Like the Vienna Convention, the Montreal Protocol is a treaty of universal participation,²¹² and its amendments have also attracted universal support.²¹³ In 1990, the Second Meeting of the Parties to the Montreal Protocol adopted the first Adjustments and Amendments to the Montreal Protocol. Those Amendments have since been ratified by all 196 states and the European Union. In 1992, the Fourth Meeting of the Parties to the Montreal Protocol adopted a second round of Adjustments and Amendments. The 1992 changes were adopted within four months of the entry into force of the 1990 Amendments and have also been ratified by all 196 states. Since 1992, there have been four further rounds of Adjustments in 1995, 1997, 1999 and 2007; and three additional Amendments have been adopted, the first at the Ninth Meeting of the Parties in 1997 (in force

²⁰⁶ Art. 10(1). ²⁰⁷ Art. 16(1).

²⁰⁸ R. Benedick, *Ozone Diplomacy* (Cambridge, MA/London: Harvard University Press, 1991), xii, an insider’s account of the negotiations of the Montreal Protocol (see also the second edition, 1998).

²⁰⁹ 1987 Montreal Protocol, Art. 3, provides for the method of calculating control levels.

²¹⁰ *Ibid.*, preambular paras. 3 and 4. ²¹¹ Preambular para. 6.

²¹² 196 states and the European Union are parties as of 11 November 2010.

²¹³ On the procedure for the adoption of adjustments and amendments, see Chapter 4, pp. 115–16.

10 November 1999, with 196 state ratifications), the second at the Eleventh Meeting of the Parties in 1999 (in force 25 February 2002, with 196 state ratifications) and the third at the Twenty-Eighth Meeting of the Parties in 2016.

The 1990 Amendments introduced important changes to the Montreal Protocol. The Preamble was amended to include a reference to the need to take into account the ‘developmental needs of developing countries’, the provision of ‘additional financial resources and access to relevant technologies’, and the ‘transfer of alternative technologies’.²¹⁴ The definitions of ‘controlled substances’ and ‘production’ were amended,²¹⁵ and a definition of ‘transitional substances’ was introduced.²¹⁶ The amended definition of ‘production’ excluded ‘recycled’ and ‘reused’ amounts.²¹⁷ Article 2(5) was amended to establish new rules concerning transfers of calculated levels of production between parties and changes were introduced to all the important operational provisions, particularly those requiring the reduction and, ultimately, the prohibition of the use of controlled substances which were subject to control measures relating to consumption, production and trade. New rules were also adopted relating to financial arrangements and technology transfer.

The 1992 Adjustments and Amendments introduced changes to the timetable for phasing out substances under Articles 2A to 2E of the amended Protocol; listed three new controlled substances and further trade restrictions; adopted new reporting requirements; enlarged the Implementation Committee; and adopted an indicative list of measures to be taken against parties which were not in compliance. It also established the Multilateral Fund on a permanent basis.

The 1997 Montreal Amendment established a new timetable for phasing out the use of methyl bromide and adopted a new licensing system for controlling trade based on licences issued by the parties for each export and import of controlled substances. The licensing system enables customs and police officials to track trade in ozone-depleting substances and to detect unlicensed trade.

The 1999 Amendment provided for new production controls on Group I, Annex C substances, listed bromochloromethane as a controlled substance and instituted new reporting obligations for quarantine and pre-shipment uses of methyl bromide.

The most recent 2016 Amendment requires a phase down in the production and consumption of hydrofluorocarbons (HFCs). This Amendment is regarded as an important breakthrough not only for regulation of ozone depletion but also in addressing climate change as HFCs are a potent greenhouse gas. It is estimated that implementation of the 2016 Amendment controls on HFCs could prevent up to 0.5 °C of global warming by the end of this century.²¹⁸

²¹⁴ 1990 Amendments, sixth, seventh and ninth preambular paragraphs.

²¹⁵ *Ibid.*, Art. 1(4) and (5); see also Decision IV/12 of the Fourth Meeting of the Parties to the Montreal Protocol excluding ‘insignificant quantities’ from the definition: see Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992.

²¹⁶ 1990 Amendments, Art. 1(9). ‘Transitional substances’ are those in Annex C to the Protocol.

²¹⁷ *Ibid.*, Art. 1(5), Decision IV/24 of the Meeting of the Parties adopted ‘clarifications’ of the terms ‘recovery’ (‘collection and storage of controlled substances . . . during servicing or prior to disposal’), ‘recycling’ (by reuse of a recovered controlled substance following a basic cleaning process) and ‘reclamation’ (‘re-processing’ and upgrading of a recovered controlled substance) (Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992).

²¹⁸ See UNEP, ‘Countries agree to curb powerful greenhouse gases in largest climate breakthrough since Paris’, UNEP Ozone Secretariat, 15 October 2016, available at www.unep.org/newscentre/Default.aspx?DocumentID=27086&ArticleID=36283&tl=en

Controlled Substances

At the heart of the Montreal Protocol is its designation of 'controlled substances' that attract special regulation under its provisions. Compared to the pre-existing international environmental rules, the original control measures established by Article 2 and Annex A of the 1987 Montreal Protocol were relatively complex and sophisticated.²¹⁹ Annex A established two groups of 'controlled substances' and an estimate of the ozone-depleting potential of each substance in the two groups. Group I lists certain chlorine substances,²²⁰ and Group II lists certain halon substances.²²¹ Subsequent amendments to the 1987 Protocol have added additional categories of controlled substances in Articles 2C to 2J and Annexes B, C, E and F respectively.²²² These cover substances such as carbon tetrachloride (Article 2D), methyl chloroform (Article 2E), hydrochlorofluorocarbons (HCFCs) (Article 2F), hydrobromofluorocarbons (Article 2G), methyl bromide (Article 2H), bromochloromethane (Article 2I) and hydrofluorocarbons (HFCs) (Article 2J). Article 2(9) of the 1987 Protocol allows the parties to make adjustments to the ozone-depleting potentials specified in Annexes A, B, C, E and/or F, as well as further adjustments and reductions of production and consumption.²²³

Control Measures: Consumption and Production

Article 2 of the 1987 Montreal Protocol adopted limitation and reduction requirements on the consumption and production of all Annex A substances (i.e. CFCs and halons). Similar requirements have since been adopted for the other controlled substances specified in Articles 2C to 2J and Annexes B, C, E and F. By Article 6, as amended by the 1992, 1999 and 2016 Amendments, the parties are to assess with the assistance of panels of experts all the Article 2 and 2A to 2J control measures on the basis of available scientific, environmental, technical and economic information.²²⁴ More stringent control measures in respect of those substances, including an accelerated timetable for phase-out, were imposed by the various Adjustments and Amendments to the Protocol. However, differentiated obligations exist for parties that are industrialised

²¹⁹ The relevant provisions of Art. 2 have now been divided into ten Articles: Art. 2 on controlled measures, Art. 2A covering CFCs, Art. 2B covering halons, Art. 2C covering other fully halogenated CFCs, Art. 2D covering carbon tetrachloride, Art. 2E covering methyl chloroform, Art. 2F covering hydrochlorofluorocarbons (HCFCs), Art. 2G covering hydrobromofluorocarbons (HBFCs), Art. 2H covering methyl bromide, and Art. 2I covering bromochloromethane.

²²⁰ CFC-11, CFC-12, CFC-113, CFC-114 and CFC-115. ²²¹ Halon-1211, halon-1301 and halon-2402.

²²² The 1990 Amendments added controlled substances in two new Annexes to the Protocol. Annex B added three new groups of controlled substances (Group I (additional CFCs), Group II (carbon tetrachloride) and Group III (methyl chloroform)), and Annex C added a list of transitional substances (HCFCs). The 1992 Amendment replaced Annex C with a new section. In 1991, the parties to the Montreal Protocol added an Annex D to the Protocol (Report of the Third Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.3/11, 21 June 1991, Decision III/15). The 1992 Amendments added methyl bromide as a controlled substance in a new Annex E. The 1999 Amendments added bromochloromethane as a controlled substance in a new Group III in Annex C. The 2016 Amendments make changes to Group I, Annex C and adds a new Annex F on HFCs.

²²³ 1987 Montreal Protocol, Art. 2(9). Such adjustments are subject to a simplified decision-making procedure whereby decisions binding on all parties may, as a last resort and consensus having failed, be taken by two-thirds of parties present and voting and representing 50 per cent of total consumption. By Art. 2(10), the parties may also decide to add or remove substances from any annex and what control measures should apply to those substances, subject to a two-thirds majority vote of parties present and voting.

²²⁴ 1987 Montreal Protocol, Art. 6. Under the Protocol, the control measures are to be assessed at least every four years on the basis of available scientific, environmental, technical and economic information; by Art. 2(11) of the 1987 Montreal Protocol, parties remain free to take more stringent measures than those required by Art. 2.

countries and so-called 'Article 5(1)' parties, covering developing countries. This includes different baseline years and extended periods to achieve the phase-out of controlled substances.

CFCs

Under the 1987 Montreal Protocol as adjusted and amended, each non-Article 5(1) party was required to limit its calculated level of consumption of Annex A, Group I substances to 1986 levels within nineteen months of the entry into force of the Protocol.²²⁵ Thereafter, annual consumption was to be reduced to 25 per cent of 1986 levels by 1 June 1994, with a complete phase-out by 1 January 1996.²²⁶ For Article 5(1) parties, the base level was the 1995–7 average with a freeze in consumption required by 1999 and reductions of 50 per cent by 1 January 2005, 85 per cent by 1 January 2007 and a complete phase-out by 1 January 2010.²²⁷ Each party was also to reduce calculated levels of production of Annex A substances by the same amounts and by the same dates.²²⁸ Production of CFCs by all parties is thus now completely prohibited, though limited exemptions may be allowed for 'essential uses' specified in decisions of the Protocol's Meeting of the Parties.²²⁹

Halons

For the halons listed in Group II of Annex A, each non-Article 5(1) party was required to freeze its calculated level of consumption at 1986 levels by 1 January 1992, with a complete phase-out by 1 January 1994.²³⁰ Thereafter, production was to be limited to 1986 levels, with a 15 per cent increase permitted until 1 January 2002 to satisfy the 'basic domestic needs' of parties operating under Article 5.²³¹ Since 1 January 2002, developing country parties operating under Article 5 have also been required to phase out production, with a 50 per cent reduction by 1 January 2005, and a complete phase-out by 1 January 2010, based on a 1995–7 baseline.²³² Again, exemptions from the ban on production may be allowed for approved essential uses.

Additional CFCs

Under the 1990 Amendments, the new Article 2C required each non-Article 5(1) party to ensure that its calculated levels of consumption and production of controlled substances in Annex B, Group I (additional CFCs) for the twelve-month period commencing 1 January 1993 and each twelve-month period thereafter did not exceed 80 per cent of consumption and production levels of those substances in 1989.²³³ Annual consumption and production of these controlled substances was not to exceed 25 per cent of 1989 levels in the twelve-month period commencing 1 January 1994 and in each twelve-month period thereafter, and the consumption and production of these additional CFCs were totally prohibited as from 1 January 1996.²³⁴ For developing

²²⁵ *Ibid.*, Art. 2A(3). ²²⁶ *Ibid.*, Art. 2A(3) and (4).

²²⁷ *Ibid.*, Art. 2A(5)–(8). The 1999 Amendments introduced new reductions for production for Art. 5 parties. These parties were required to phase out production of Group I, Annex A CFCs by 1 January 2010, with intermediate reductions of 20 per cent by 2003, 50 per cent by 2005 and 85 per cent by 2007, based on their average annual production for basic domestic needs for the period 1995–7.

²²⁸ Montreal Protocol Arts. 2A and 2B. ²²⁹ Art. 2A(4). ²³⁰ *Ibid.*, Art. 2B(1) and (2). ²³¹ *Ibid.*, Art. 2B(2).

²³² *Ibid.*, Art. 2B(3) and (4). ²³³ Art. 2C(1).

²³⁴ *Ibid.*, Art. 2C(1), (2) and (3). In order to satisfy 'basic domestic needs', a party operating under Art. 5(1) was permitted to exceed that level of production by 15 per cent of its 1989 levels up to 1 January 2003. By 1 January 2003, production for basic domestic needs was to be reduced by 20 per cent, with a cut of 85 per cent by 1 January 2007 before a total phase-out by 1 January 2010 (*ibid.*, Art. 2C(3)–(5)).

countries, a different base level of 1998–2000 applied, with required reductions of 20 per cent by 1 January 2003, 85 per cent by 1 January 2007 and 100 per cent by 1 January 2010 (subject to possible essential use exemptions).²³⁵

Carbon Tetrachloride

Under the 1990 Amendments, each non-Article 5(1) party's calculated annual levels of consumption and production of Annex B, Group II controlled substances (carbon tetrachloride) for the twelve-month period commencing 1 January 1995, and each twelve-month period thereafter was not to exceed 15 per cent of 1989 levels for those substances,²³⁶ and the production and consumption of carbon tetrachloride were totally prohibited as from 1 January 1996.²³⁷ For Article 5(1) developing countries, the relative commitments were for an 85 per cent reduction from the 1998–2000 average level by 1 January 2005, and complete phase-out of consumption and production from 1 January 2010.²³⁸

Methylchloroform

Under the 1990 Amendments, each non-Article 5(1) party's calculated annual levels of consumption and production of Annex B, Group III controlled substances (methylchloroform) for the twelve-month period commencing 1 January 1993 and each twelve-month period thereafter was not to exceed its consumption and production levels of those substances in 1989.²³⁹ Thereafter, consumption and production were to be reduced to 50 per cent of 1989 levels by 1 January 1994 and in each twelve-month period thereafter, with a total prohibition on the consumption and production of methylchloroform as from 1 January 1996.²⁴⁰ Again, differentiated requirements applied for developing countries operating under Article 5: a 70 per cent reduction from the average of 1998–2000 levels was required by 1 January 2010, with a complete phase-out in production and consumption by 1 January 2015.

HCFCs, Hydrobromofluorocarbons and Methyl Bromide

The 1992 Amendments added three new Articles to the Montreal Protocol to phase out the use of the three controlled substances listed in Annex C to the Protocol. Article 2F was introduced to require parties to limit their annual consumption of Annex C, Group I substances (HCFCs) to no more than 3.1 per cent²⁴¹ of their level of consumption of Annex A, Group I substances in 1989 and their total level of consumption of Annex C, Group I substances in 1989.²⁴² Article 2F, as adjusted by the 2007 Adjustments, then requires a gradual thirty-five-year phase-out of consumption of HCFCs to levels of 65 per cent (1 January 2004), 25 per cent (1 January 2010), 10 per cent (1 January 2015), 0.5 per cent (1 January 2020) and zero (1 January 2030).²⁴³ For Article 5(1) developing countries, a different base level of 2009–10 is allowed, with a freeze in

²³⁵ *Ibid.*, Art. 2C(3)–(5). ²³⁶ 1990 Amendments, Art. 2D(1).

²³⁷ Art. 2D(1) and (2). In order to satisfy 'basic domestic needs', a party operating under Art. 5(1) was permitted to exceed that level of production by 15 per cent of its 1998–2000 levels until 1 January 2005 but had to achieve a phase-out by 2010 (*ibid.*, Arts. 2D(2) and 5(8bis)).

²³⁸ *Ibid.*, Arts. 2D(2) and 5(8bis). ²³⁹ Art. 2E(1).

²⁴⁰ *Ibid.*, Art. 2E(1)–(4). Parties operating under Art. 5(1) were required to freeze production for 'basic domestic needs' at 1998–2000 levels by 1 January 2003. Reductions in production were to be achieved by 2005 (30 per cent) and 2010 (70 per cent) with a total phase-out by 1 January 2015 (*ibid.*, Arts. 2E(3) and 5(8bis)).

²⁴¹ This level was changed to 2.8 per cent by the 1995 Amendments. ²⁴² 1992 Amendments, Art. 2F(1).

²⁴³ Montreal Protocol, Art. 2F(2)–(6).

consumption required by 1 January 2013, followed by staged reductions of 10 per cent by 1 January 2015, 35 per cent by 1 January 2020, 67.5 per cent by 1 January 2025, 97.5 per cent by 1 January 2030 and 100 per cent by 1 January 2040.²⁴⁴ Article 2F also commits parties to 'endeavour' to ensure that the use of HCFCs is limited to applications where alternatives are not available, that such use is not outside the areas of application currently met by substances in Annexes A, B and C (except in some cases for the protection of human life and/or human health), and that they are used in a manner that minimises ozone depletion.²⁴⁵

Amendments to Article 2F agreed in the 1999 Amendments committed the parties to new control measures for the production of HCFCs. Developed countries were required to limit their annual production of HCFCs to a level calculated as an average of (1) the sum in 1989 of HCFC consumption and 2.8 per cent of the level of consumption of Annex A, Group I substances *and* (2) the sum in 1989 of HCFC production and 2.8 per cent of the level of consumption of Annex A, Group I substances by 1 January 2004. Thereafter, a staged timetable for reductions is set, of 90 per cent by 1 January 2015, 99.5 per cent by 1 January 2020 and zero production levels by 1 January 2040. Developing countries operating under Article 5 are subject to a freeze on HCFC production that started in 2013 based on average production and consumption in 2009–10, with a phased reduction over the following twenty-seven years.²⁴⁶

Article 2G introduced a prohibition on the production and consumption of Annex C, Group II substances (hydrobromofluorocarbons) after 1 January 1996, except for 'essential uses'.

Article 2H was introduced to limit the annual production and consumption of Annex E substances (methyl bromide) to 1991 levels from 1995 for developed country parties. A new phase-out programme for methyl bromide was introduced by the 1997 Amendments. Developed country parties were required gradually to reduce the production and consumption of methyl bromide from 1991 levels by 25 per cent (1 January 1999), 50 per cent (1 January 2001), 70 per cent (1 January 2003) and 100 per cent (1 January 2005). Developing country parties operating under Article 5 committed to freeze production of methyl bromide for basic domestic needs at 1995–8 levels by 1 January 2002, with a total phase-out by 2015. Exemptions to these requirements may apply for certain 'critical uses' and amounts used for quarantine and pre-shipment purposes are also exempted.

Bromochloromethane

The 1999 Amendments added new control measures for bromochloromethane. Pursuant to Article 2I, parties are subject to a ban on the production and consumption of bromochloromethane from 1 January 2002, other than for amounts the Protocol's Meeting of the Parties decide are necessary to satisfy 'essential' uses.

HFCs

The most recent 2016 Amendments to the Protocol add new control measures for hydrofluorocarbons (HFCs). Pursuant to Article 2J, developed country parties are required to commence a phase-down of their consumption of HFCs from 1 January 2019. Developing countries are to follow with a freeze of HFCs consumption levels in 2024, though some parties may be permitted to delay compliance until 2028 in order to meet basic domestic needs. By 2036 for developed

²⁴⁴ 2007 Montreal Adjustment on Production and Consumption of HCFCs.

²⁴⁵ Montreal Protocol, Art. 2F(7).

²⁴⁶ Art. 5(8*ter*).

countries, and 2045 or 2047 for developing countries, the total consumption of HFCs by all parties is expected to be no more than 15–20 per cent of their respective baselines.

Transfer of Production

The 1987 Montreal Protocol also provides for transfer of production and rules regarding facilities under construction. Article 2(5) sets out the conditions under which parties may transfer to any other party any portion of its calculated level of production set out in Articles 2A to 2F and 2H and 2J. The 1992 Amendments introduced a new Article 2(5*bis*) allowing any party not operating under Article 5(1) also to transfer to another such party any portion of its calculated level of *consumption* set out in Article 2F provided that certain conditions are fulfilled. Article 2(6) allowed a party not operating under Article 5 to complete facilities for production under construction or contracted for prior to 16 September 1987, provided that facilities were completed by 31 December 1990 and the party's level of consumption remained below 0.5 kilograms per capita.

By Article 2(8), parties who are member states of a regional economic integration organisation (such as the EU) may 'jointly fulfil' their obligations provided that their total combined level of consumption does not exceed levels set by the Protocol, and that certain procedural obligations are fulfilled (the parties to any such agreement must inform the secretariat and all member states of the regional organisation, and the organisation itself).

Control Measures: Trade in Controlled Substances

Article 4 of the 1987 Montreal Protocol established innovative trade provisions to achieve its environmental objectives. Although initially somewhat controversial, they are now widely recognised for their effectiveness in creating incentives for states to become party to the Protocol. These measures addressed: the trade in controlled substances by parties with states not party to the Protocol; the trade in products containing controlled substances; and the trade in products produced with but not containing controlled substances. Article 4 represented the first occasion on which the international community adopted trade measures for environmental protection outside the field of flora and fauna, although the trade prohibition does not apply to a non-party found by the parties to be in full compliance with Articles 2, 2A to 2J, 4 and 7 of the Protocol.

Imports of controlled substances in Annex A from non-parties were banned,²⁴⁷ and from 1 January 1993 developing country parties were prohibited from exporting to non-parties.²⁴⁸ Subsequent amendments to Article 4 extended import and export bans to and from non-parties to cover controlled substances listed in the other Annexes.²⁴⁹ Articles 4(3), 4(3*bis*) and 4(3*ter*) provide for the ban on imports of certain products containing controlled substances into certain parties from non-party states. Parties were also required to determine the feasibility of banning or restricting imports of products produced with, but not containing, controlled substances, and if feasible adopt the necessary bans or restrictions.²⁵⁰ The 1987 Montreal Protocol further requires parties to discourage exports of technology for producing and using controlled

²⁴⁷ Art. 4(1). ²⁴⁸ Art. 4(2).

²⁴⁹ 1990 Amendments, Annex A and B substances; 1992 Amendments, Group II Annex C; 1997 Amendments, Annex E; 1999 Amendments, Group I and Group III of Annex C; 2016 Amendments, Annex F.

²⁵⁰ 1987 Montreal Protocol, Art. 4(4), (4*bis*) and (4*ter*).

substances,²⁵¹ and to refrain from providing new subsidies, aid, credits, guarantees or insurance for the export to non-party states of products, equipment, plants or technology which would facilitate the production of controlled substances.²⁵² Exceptions are allowed for products, equipment, plant or technology that improve containment, recovery, recycling or destruction of controlled substances, promote the development of alternative substances, or otherwise contribute to reductions of controlled substances.²⁵³

Changes introduced by the 1997 Amendments required parties, by February 2000, to implement a system for licensing the import and export of new, used, recycled and reclaimed controlled substances.²⁵⁴ Those parties unable to cease the production of a controlled substance for domestic production by the applicable phase-out date must ban the export of used, recycled and reclaimed quantities of that substance, other than for the purpose of destruction.²⁵⁵

Developing Countries

The 1987 Montreal Protocol included provisions to take account of the special needs of developing countries, including large users of CFCs such as India and China, who were unwilling to become parties to the Protocol because of the economic and developmental implications of the Protocol. Article 5(1) of the Protocol allowed developing country parties whose calculated level of consumption was less than 0.3 kilograms per capita a grace period of ten years beyond the dates then set for phase-out in Article 2(1)–(4) of the Protocol.²⁵⁶ In addition, but without specifying how it was to be achieved, the parties agreed to facilitate access to ‘environmentally safe alternative substances’ and to provide developing countries with subsidies, aid, credits, guarantees or insurance programmes for alternative and substitute products.²⁵⁷

The original provisions of the Montreal Protocol were insufficiently attractive to encourage the participation of many developing countries, and further incentives were adopted by the 1990 Amendments. These developed the rules concerning the special situation of developing countries by replacing Article 5 in full and establishing, under a new Article 10, a mechanism to provide financial resources. The amended Article 5 created an incentive for developing countries to become parties to the Protocol before 1 January 1999 by fixing that date as the final point at which states would be able to benefit from the commencement of the ten-year period of delay for compliance with the control measures in Articles 2A to 2E, as amended.²⁵⁸ Significantly, Article 5(5) of the 1990 Amendments recognised that the capacity of developing country parties to fulfil their obligations and their implementation would depend upon ‘the effective implementation of the financial cooperation as provided by Article 10 and transfer of technology as provided by Article 10A’. This marked the first time that an international environmental agreement linked implementation to the receipt of financial resources and the transfer of technology.

The 1992 Amendments created the possibility that the period of grace would also apply to the 1992 Amendments substances after the 1995 review required under Article 5(8) of the 1990 Amendments.²⁵⁹ The 1992 Amendments also introduced a new Article 5(1*bis*) requiring the parties to decide by 1 January 1996 on phase-out and/or a consumption and production

²⁵¹ *Ibid.*, Art. 4(5). ²⁵² *Ibid.*, Art. 4(6). ²⁵³ *Ibid.*, Art. 4(7).

²⁵⁴ Art. 4B. Delays were permitted for developing countries in implementation of these provisions for Annex C substances (1 January 2005) and Annex E substances (1 January 2002).

²⁵⁵ Art. 4A. ²⁵⁶ Currently 147 of the Protocol’s parties meet this criterion.

²⁵⁷ 1987 Montreal Protocol, Art. 5(2) and (3). These provisions no longer appear in Article 5 of the amended Protocol.

²⁵⁸ 1990 Amendments, Art. 5(1). ²⁵⁹ 1992 Amendments, Art. 5(1).

timetable for Annex C, Groups I and II, and Annex E substances for parties operating under Article 5(1). Other changes provided by the new Article 5 – now all in force, other than the most recent 2016 amendments – include limiting parties operating under Article 5(1) to those with annual levels of consumption of 0.2 kilograms per capita of Annex B substances and providing for the situation in which a party operating under Article 5(1) finds itself unable to obtain an adequate supply of controlled substances or unable to implement any or all of its obligations in Articles 2A to 2E and 2F (or obligations in Articles 2F to 2H decided pursuant to Article 5(1bis)) due to the inadequate implementation of the provisions on financial cooperation and transfer of technology.²⁶⁰ The really significant change, however, was the amendment to Article 10, which set a precedent followed in subsequent agreements addressing global environmental problems.

Technical, Financial and Other Assistance

The original Article 10 of the Montreal Protocol contained rather innocuous and traditional environmental treaty provisions on technical assistance, particularly for developing countries, to facilitate participation in and implementation of the Protocol, including through the preparation of work plans. The 1990 Amendments introduced a radical and innovative change that has had profound consequences on the negotiation of subsequent global environmental treaties, particularly the Climate Change and Biodiversity Conventions. The innovation was to introduce financial incentives, almost of a compensatory nature, to entice hesitant developing countries to join the Montreal Protocol regime.²⁶¹

The new Article 10 established a ‘Financial Mechanism’ to provide financial and technical cooperation, including the transfer of technologies, to parties operating under Article 5(1) of the Protocol to enable their compliance with Articles 2A to 2E and 2J of the amended Protocol.²⁶² The mechanism, which is to meet ‘all agreed incremental costs’ of such parties, includes a Multilateral Fund to meet, on a grant or concessional basis, the agreed incremental costs; to finance certain clearing house functions related to, inter alia, identifying needs for and facilitating cooperation; and to finance the secretariat services of the Fund.²⁶³ The Fund operates under the authority of the parties, who decide on its overall policies. It is overseen by an Executive Committee, comprised of seven developed and seven developing country party representatives, which implements specific operational policies, guidelines and administrative arrangements, including the disbursement of resources, with the cooperation of the World Bank, UNEP, UNDP

²⁶⁰ Montreal Protocol, Art. 5(2), (4) and (6).

²⁶¹ See further, R. Bowser, ‘History of the Montreal Protocol’s Ozone Fund’, 14 *International Environmental Reporter* 6356 (1991); P. Lawrence, ‘Technology Transfer Funds and the Law: Recent Amendments to the Montreal Protocol on Substances That Deplete the Ozone Layer’, 4 *Journal of Environmental Law* 15 (1992); J. Patlis, ‘The Multilateral Fund of the Montreal Protocol: A Prototype for Financial Mechanism in Protecting the Global Environment’, 25 *Cornell International Law Journal* 181 (1992); F. Biermann, ‘Financing Environmental Policies in the South: Experiences from the Multilateral Ozone Fund’, 9 *International Environmental Affairs* 179 (1997).

²⁶² 1990 Amendments, Art. 10(1). The 1992 Amendments extended the application of the Financial Mechanism to control measures under Arts. 2F to 2H that are decided pursuant to Art. 5(1bis) of the 1992 Amendments. Since the establishment of the Multilateral Fund in 1990, the Executive Committee has approved the expenditure of approximately \$3.185 billion USD, to support projects that will result in the phase-out of 463,814 ODP tonnes of controlled substances. As of the end of December 2013, approximately 453,771 ODP tonnes had already been phased out (see www.multilateralfund.org).

²⁶³ Montreal Protocol, Art. 10(2) and (3); see Annex VIII of the Report of the Fourth Meeting of the Parties to the Montreal Protocol for an ‘Indicative List of Categories of Incremental Cost’, UNEP/OzL.Pro.4/15, 25 November 1992 (the updated version can be found in Annex XI.3 of the Policies, Procedures, Guidelines and Criteria of the Multilateral Fund, www.multilateralfund.org/Our%20Work/policy/default.aspx).

and UNIDO.²⁶⁴ The Multilateral Fund is financed by contributions from parties not operating under Article 5(1) (i.e. developed countries) on the basis of the UN scale of assessments, in convertible currency, in kind and/or in national currencies.²⁶⁵ The Protocol, as amended in 1990, also allows bilateral and regional cooperation in financing provided that such cooperation, at a minimum, relates to compliance with the Montreal Protocol, provides additional resources and meets incremental costs.²⁶⁶ Resources are to be disbursed with the concurrence of the beneficiary party.²⁶⁷ Decisions of the Fund are taken by consensus wherever possible, otherwise by a two-thirds majority of the parties present and voting, including a 'double majority' of developed country parties and of developing country parties.²⁶⁸

Under Article 10A, also introduced by the 1990 Amendments, each party agrees to take every practicable step, consistent with the programmes supported by the financial mechanism, to ensure that the best available 'environmentally safe substitutes and related technologies' are expeditiously transferred, under fair and most favourable conditions, to parties operating under Article 5(1).

Reporting and Compliance

The principal techniques for ensuring compliance with the Protocol and its amendments are the reporting requirements, coupled with the non-compliance procedure and trade sanctions, which are more detailed than most environmental treaties.²⁶⁹ Article 7(1) requires all parties to report data on production, imports and exports of each controlled substance for 1986 and for the year during which it became a party and each year thereafter. Article 9 provides for research, development, public awareness and exchange of information. Subsequent amendments introduced changes to Article 7 concerning the provision of data on production, imports and exports of controlled substances in Annexes A, B, C and E and F,²⁷⁰ and separate data on amounts used for feedstocks, amounts destroyed by approved technologies, and imports and exports to parties and non-parties.²⁷¹

Institutional Arrangements

The Protocol is operated under the auspices of regular Meetings of the Parties whose functions include: reviewing implementation of the Protocol; deciding on any adjustments or reductions under Article 2(9) and on the addition or removal of substances from any Annex under Article 2(10); assessing the Article 2A to 2I control measures; and considering and adopting proposals for amendment of the Protocol or any Annex and for any new Annex.²⁷² The Protocol also

²⁶⁴ *Ibid.*, Art. 10(4) and (5). UNIDO was not one of the original implementing agencies.

²⁶⁵ *Ibid.*, Art. 10(6). The Fund has been replenished nine times: \$240 million USD (1991–3), \$455 million USD (1994–6), \$466 million USD (1997–9), \$440 million USD (2000–2), \$474 million USD (2003–5), \$400.4 million USD (2006–8), \$400 million USD (2009–11), \$400 million USD (2012–14) and \$437.5 million USD (2015–17). As at 15 May 2015, the contributions made to the Multilateral Fund by some forty-five industrialised countries totalled over \$3.34 billion USD (see www.multilateralfund.org).

²⁶⁶ *Ibid.*, Art. 10(6). ²⁶⁷ *Ibid.*, Art. 10(8). ²⁶⁸ *Ibid.*, Art. 10(9).

²⁶⁹ On the Implementation Committee and the Non-Compliance Procedure established by the Meeting of the Parties to the Montreal Protocol, see Chapter 5, pp. 172–5.

²⁷⁰ Art. 7(2).

²⁷¹ Art. 7(1), (2) and (3), as amended by the 1990 Amendments. See also Art. 7(2) and (3) as amended by the 1992 and 2016 Amendments; Art. 7(3*bis*) of the 1992 Amendments introduced a reporting requirement on imports and exports of certain substances that have been recycled.

²⁷² 1987 Montreal Protocol, Art. 11(4).

establishes specific tasks for the secretariat, which is provided by UNEP.²⁷³ At their second meeting, the parties to the 1987 Montreal Protocol approved procedures and mechanisms for determining non-compliance and the consequences thereof.²⁷⁴ This innovative non-compliance mechanism has served as a model for subsequent international environmental treaties, including the climate change regime.

OUTER SPACE

The international laws discussed so far in this chapter have been concerned with atmospheric protection where the 'atmosphere' is conceived as the gaseous envelope surrounding the Earth.²⁷⁵ Beyond the reaches of the atmosphere, however, lies the realm of outer space. Environmental problems in outer space are of three types: orbital space debris; environmental damage caused on or to other planets as a result of human exploratory activity; and environmental damage caused on Earth as a result of human-made objects falling from space. The international legal regime regulating environmental aspects of outer space includes three treaties and two sets of principles: the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies (1967 Outer Space Treaty);²⁷⁶ the Convention on Registration of Objects Launched into Outer Space (1975 Space Registration Convention);²⁷⁷ the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979 Moon Treaty);²⁷⁸ the Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space (1963 Legal Principles);²⁷⁹ and the Principles Relevant to the Use of Nuclear Power Sources in Outer Space (1992 Outer Space Principles).²⁸⁰ The 1972 Space Liability Convention is considered in Chapter 16.

Four of these agreements were adopted before environmental considerations had become an important international legal issue, and do not reflect some of the legal and scientific innovations which have occurred in the past few decades. In the meantime, increased human activity in outer space has contributed to greater environmental threats. It has been estimated, for example, that space debris comprises some 7,000 pieces of debris larger than ten centimetres; 17,500 pieces of between one and ten centimetres; and 3,500,000 pieces of less than one centimetre.²⁸¹ Space debris constitutes an environmental hazard as it increases the risk of collision and consequential damage; because of the high speed at which objects in orbit travel, objects as small as one centimetre can penetrate the crew compartments of spacecraft, and debris 0.5 millimetres in size can kill an astronaut protected only by a spacesuit.²⁸² Moreover, human

²⁷³ *Ibid.*, Art. 12. ²⁷⁴ *Ibid.*, Art. 8; see Chapter 5, pp. 172–5.

²⁷⁵ IPCC, 2013: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (2013), Annex III (Glossary), 1448.

²⁷⁶ London, Moscow and Washington, 27 January 1967, in force 10 October 1967, 610 UNTS 205.

²⁷⁷ 14 January 1975, in force 15 September 1976, 28 UST 695.

²⁷⁸ New York, 5 December 1979, in force 11 July 1984, 18 ILM 1434 (1979). ²⁷⁹ UNGA Res. 18/1962 (1963).

²⁸⁰ UNGA Res. 47/68, 32 ILM 917 (1993). See also the Declaration on International Co-operation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, UNGA Res. 51/122.

²⁸¹ Figures cited in L. D. Roberts, 'Addressing the Problem of Orbital Space Debris: Combining International Regulatory and Liability Regimes', 15 *Boston College International and Comparative Law Review* 53 (1992); the sources of debris include fragments caused by explosion, hyper-velocity impact or deterioration of the surfaces of payloads, as well as inactive payloads, spent rocket thrusters and other material produced by spacecraft operations (*ibid.*, 54–5).

²⁸² *Ibid.*, 55.

uses of space continue to expand in diverse fields from communications and navigation, to weather forecasting and disaster response. Unprecedented outer space activities are also under active consideration, including efforts to land people on Mars or geoengineering projects to combat climate change.²⁸³ These novel uses of outer space will provide significant challenges for the settled regime of space law in coming years.

1967 Outer Space Treaty

The 1967 Outer Space Treaty states that the exploration and use of outer space (including the Moon and other celestial bodies) is to be carried out for the benefit and interests of all countries, and shall be ‘the province of all mankind’.²⁸⁴ Outer space is not subject to national claims of sovereignty and all activities are to be carried out in the interest of maintaining international peace and security.²⁸⁵ The Treaty includes provisions with important implications for environmental protection. In particular, nuclear weapons and other weapons of mass destruction may not be placed in orbit around the Earth, installed on celestial bodies, or stationed in outer space, and the Moon and other celestial bodies may only be used for ‘peaceful purposes’.²⁸⁶

Article IX sets out some fundamental obligations:²⁸⁷ exploration and use of outer space is to be guided by the principle of cooperation and mutual assistance, and all activities are to be conducted ‘with due regard to the corresponding interests’ of all other parties to the Treaty. Moreover, studies and exploration of outer space must avoid ‘the harmful contamination and adverse changes in the environment of the earth resulting from the introduction of extra-territorial matter’. Parties are also under an obligation to undertake ‘appropriate international consultations’ before proceeding with activities or experiments that may cause ‘potentially harmful interference’ with activities of other states parties. It is evident that the approach of Article IX is directed towards the protection of human beings, rather than the protection of the environment as an end in itself.

1979 Moon Treaty

The 1979 Moon Treaty, which applies to the Moon and celestial bodies other than the Earth, provides that the Moon and its natural resources are the ‘common heritage of mankind’ and are to be used exclusively for peaceful purposes.²⁸⁸ Exploration and use of the Moon is the province of all mankind, and due regard is to be paid to the interests of present and future generations.²⁸⁹

Article 7 sets out provisions on the protection of the environment of celestial bodies going beyond that established in the 1967 Outer Space Treaty. In their exploration and use of the Moon, the parties are required to:

²⁸³ Chris Borgen, ‘ASIL Launches the Space Law Interest Group’, *Opinio Juris*, Apr. 5, 2013, at <http://opiniojuris.org/2013/04/05/asil-launches-the-space-law-interest-group>

²⁸⁴ Art. I. ²⁸⁵ Arts. II and III. ²⁸⁶ Art. IV.

²⁸⁷ The 1967 Treaty also includes provisions on international responsibility and liability (Arts. VI and VIII) (see Chapter 16, pp. 762–3).

²⁸⁸ Arts. 1(1), 3(1) and 11(1). ²⁸⁹ Art. 4(1).

take measures to prevent the disruption of the existing balance of its environment whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter or otherwise. States parties shall also take measures to avoid harmfully affecting the environment of the earth through the introduction of extra-territorial matter or otherwise.²⁹⁰

The 1979 Treaty does not prohibit the placement of radioactive materials on the Moon but does require the UN Secretary General to be notified in advance of all such placements. The Treaty also provides for the possible designation of international scientific preserves.²⁹¹ The exploitation of the natural resources of the Moon is not prohibited by the Treaty. Instead, the parties agreed to establish an international regime to govern such exploitation when it is about to become feasible, and to include in such a regime provisions for the orderly and safe development and rational management of the Moon's natural resources.²⁹² Although the provisions on the exploitation of the Moon's natural resources do not expressly refer to the need to establish rules on environmental protection, they should be read as being subject to the environmental protection requirements established by Article 7. The 1979 Moon Treaty includes provisions on international responsibility and recognises the need to develop arrangements on liability.²⁹³

Outer Space Principles

The eleven Principles Relevant to the Use of Nuclear Power Sources in Outer Space, which were adopted by the UN General Assembly in December 1992, were prepared by the Committee on the Peaceful Uses of Outer Space.²⁹⁴ In order to minimise the quantity of radioactive material in space, Principle 3 provides that the use of nuclear power sources in space is to be restricted to those missions that cannot be operated by non-nuclear energy sources in a reasonable way. To that end, the Principles establish general goals for radioactive protection and safety, including the requirement that hazards in foreseeable operational or accidental circumstances are kept within acceptable levels and that radioactive material does not cause a 'significant contamination' of outer space.²⁹⁵ The use of nuclear reactors in space is limited to interplanetary missions, in sufficiently high orbits and to low earth orbits if they are subsequently stored in sufficiently high orbits,²⁹⁶ and only highly enriched uranium-235 may be used as fuel. Radio-isotope generators may only be used for interplanetary missions and other missions leaving Earth's gravity.²⁹⁷ The Principles also include rules on safety assessment, the notification of re-entry, consultation and assistance to states, and on responsibility and liability.²⁹⁸

²⁹⁰ Art. 7(1). Parties are also required to take all practicable measures to safeguard the life and health of persons on the Moon (Art. 10(1)).

²⁹¹ Art. 7(2) and (3). ²⁹² Art. 11(5) and (7)(a) and (b). ²⁹³ Art. 14. ²⁹⁴ UNGA Res. 47/68 (1992).

²⁹⁵ Principle 3(1)(a). Acceptable levels are defined in Principle 3(1)(b) and (c), including recommendations of the International Commission on Radiation Protection, generally accepted international radiological protection guidelines and specified numerical values.

²⁹⁶ Principle 3(2). ²⁹⁷ Principle 3(3). ²⁹⁸ Principles 4–7 (see Chapter 16, pp. 762–3).

CONCLUSIONS

Despite its slow start, the rules of international law governing the protection of the atmosphere and outer space include some of the most detailed and complex in international environmental law. As described in this chapter, regional and global developments have taken place which establish significant limitations on the right of states to allow emissions of gases and other pollutants which cause urban and transboundary air pollution and depletion of the ozone layer. In so doing, a broad range of regulatory techniques has been deployed, including the total phase-out of the production and consumption of certain ozone-depleting substances, the use of a 'target-and-timetable' approach, differentiated commitments for developed and developing countries, and innovative new approaches such as 'critical load' and 'multi-pollutant/multi-effect' instruments addressing the attainment of the objectives of the transboundary air pollution and ozone depletion regimes. Supplementing these substantive commitments and techniques are a number of novel institutional arrangements (to provide technical assistance and address non-compliance), as well as novel procedural obligations, recognition of the primary responsibility of industrialised nations, and the establishment of financial arrangements to encourage the participation of developing countries in global rules.

The international rules governing the protection of the atmosphere are at the cutting edge of international environmental law. They have attracted interest from states, scientists, business and environmental organisations largely because of the significance of the threats they seek to address and the broad scope of the activities they embrace, including in particular, the manufacturing, transport and energy sectors. Specific regimes – such as the ozone regime under the Vienna Convention and Montreal Protocol – are seen as rare 'successes' of international environmental law, examples that might inform legal development in other areas once political will has been harnessed. The achievements of international environmental law in the area of atmospheric protection are far-reaching and relatively speedy. Nevertheless, major gaps remain to be addressed.

First, in relation to urban and transboundary air pollution, the rules are mostly applicable to developed countries in the OECD/UNECE/EU context; as rapid industrialisation takes place in other regions, there is a need to develop rules to address these related problems. Framework agreements concluded in the Asian and African regions suggest this process is under way,²⁹⁹ sponsored by UNEP in a manner similar to its successful Regional Seas Programme. Nevertheless, these agreements lack the sophistication and reach of equivalent instruments applicable to industrialised countries. Second, with agreements such as the 1999 Gothenburg Protocol and the 1999 Amendments to the Montreal Protocol now having been in force for several years, attention is increasingly turning to the enforcement of these agreements (including independent verification that targets and timetables have been and are being complied with) as well as the financial arrangements necessary to encourage and maintain the participation of developing countries and countries with economies in transition. Third, as the treaty regimes expand to cover new categories of pollutants like black carbon and mercury emissions their interactions with other areas of international environmental law – such as the climate change regime – become more critical. The Gothenburg Protocol's multi-pollutant, multi-effect approach in this context provides a template for a more integrated approach. Finally, as we look beyond atmospheric protection to the protection of the environment of outer space, we can envision several new challenges that international environmental law will likely need to confront in the

²⁹⁹ See n. 41.

future. These include how to regulate the environmental impact of increased human uses of space for a variety of activities, including communication, space stations, space tourism and, potentially, climate change mitigation.

FURTHER READING

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- H. Taubenfeld, 'International Environmental Law: Air and Outer Space', 13 *Natural Resources Journal* 315 (1973);
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 S. Murase, *International Law: An Integrated Perspective on Transboundary Issues* (Tokyo: Sophia University Press, 2011).

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 J. Brunnée, *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Dobbs Ferry, NY: Transnational, 1988);
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- J. Lammers, 'Efforts to Develop a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer', 1 *Hague Yearbook of International Law* 255 (1988);
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 E. A. Parson, *Protecting the Ozone Layer: Science and Strategy* (Oxford: Oxford University Press, 2003);
 UNEP, *Handbook for the Montreal Protocol on Substances That Deplete the Ozone Layer* (2009, 8th edn);
 T. Akanle, 'Impact of Ozone Layer Protection on the Avoidance of Climate Change: Legal Issues and Proposals to Address the Problem', 19(2) *Review of European Community and International Environmental Law* 239 (2010);
 D. Downie, 'Stratospheric Ozone Depletion', in P. Harris (ed.), *Routledge Handbook of Global Environmental Politics* (Abingdon, UK: Routledge, 2013).

8

Climate Change

CHAPTER OUTLINE

This chapter addresses the international rules on climate change, now a substantial and complex area. The chapter is divided into four parts:

1. the nature of the climate change problem and the challenges that it poses for international regulation;
2. development of the international climate change regime, including:
 - (a) the 1992 United Nations Framework Convention on Climate Change;
 - (b) the 1997 Kyoto Protocol; and
 - (c) negotiations for a new climate change agreement;
3. key provisions of the 2015 Paris Agreement, which establishes arrangements for international governance and regulation of climate change post 2020; and
4. intersectoral linkages between international climate change law and other treaty regimes and organisations dealing with climate change.

INTRODUCTION

In the first three editions of this book, the problem of climate change and the international legal arrangements developed to address it, were included in the chapter on atmospheric protection.¹ Today, however, international law on climate change constitutes a vast field in its own right. It incorporates not only regulation of atmospheric pollution resulting from the release of greenhouse gases from human activities, but also a range of other issues, including impacts and adaptation, loss and damage, finance, deforestation and forest degradation (REDD+), carbon markets, and linkages with other areas of international law, such as human rights and trade. Moreover, with the conclusion and entry into force of the 2015 Paris Agreement,² the structures and processes of rules relating to climate change differ significantly from certain other areas of international environmental law. The Paris Agreement signals a tectonic shift, away from a top-down international

¹ P. Sands and J. Peel, *Principles of International Environmental Law* (Cambridge: Cambridge University Press, 2012, 3rd edn), ch. 7.

² As of August 2017, the Paris Agreement has 159 parties, including the United States, although the Trump administration has submitted a communication to the UN stating the intent of the United States to withdraw from the Paris Agreement as soon as it is eligible to do so under Article 28 of the Agreement.

standard-setting approach (as in the ozone regime),³ to a bottom-up regulatory model by which states determine their national contributions to the global response to climate change.⁴

This chapter provides an introduction to the field of international climate change law, with a focus on the requirements of the Paris Agreement. It begins with a discussion of the climate change problem, summarising the latest scientific findings and highlighting some of the complexities of the issue that have precipitated a substantially different international legal response to that seen in other environmental areas. A brief overview is then provided of the two treaty instruments that preceded, and underpin, the 2015 Paris Agreement: the 1992 Framework Convention on Climate Change and the 1997 Kyoto Protocol. While important in putting climate change on the international agenda, and effecting a shift in consciousness, these treaties failed to slow emissions growth sufficiently or bring about the substantial reorientation in states' economic policies concerned with energy production, industrial activity, transportation and forestry, necessary to achieve a sustainable climate future.⁵ After an international negotiations process spanning more than a decade, the Paris Agreement was concluded at the twenty-first conference of the parties to the Framework Convention held in Paris in December 2015. The Agreement's 'long-term temperature goal' is to hold 'the increase in the global average temperature to well below 2°C above pre-industrial levels'⁶ – the temperature threshold that the vast majority of climate scientists have designated as the maximum safe level of global warming⁷ – and to 'pursue efforts' to limit the temperature increase to the lower level of 1.5 °C above pre-industrial levels, 'recognizing that this would significantly reduce the risks and impacts of climate change.'⁸ Parties also aim to achieve net zero carbon emissions in the second half of the twenty-first century,⁹ an objective that will require the eventual phase out of fossil fuels.

Whether the Paris Agreement turns out to be a 'historic breakthrough or high stakes experiment',¹⁰ will depend to a large degree on the extent to which states and other actors put forward robust domestic mitigation measures, engage in the review processes, and strengthen their commitments progressively over time.

Regardless of how effective states' mitigation measures are, delays in putting in place strong emissions controls have 'locked in' some level of climate change impact and increased the prospects for climate disaster in many vulnerable areas around the world. Enhanced need for measures to manage climate change effects (adaptation) and to deal with unavoidable climate harms (loss and damage), as well as the technology, capacity-building and finance arrangements required to support this, has seen these aspects receive increasing attention in the international climate change regime and in the provisions of the Paris Agreement. Climate change is no longer solely or even mostly a problem of atmospheric pollution, but rather a complex,

³ Initial negotiations for a climate treaty sought to follow the Montreal Protocol model. See R. Benedick, 'The Montreal Ozone Treaty: Implications for Global Warming', 5 *American University Journal of International Law and Policy* 217 (1990).

⁴ See also R. Stewart, M. Oppenheimer and B. Rudyk, 'Building Blocks for Global Climate Protection', 32 *Stanford Environmental Law Journal* 341 (2013).

⁵ See D. Clarke, 'Has the Kyoto Protocol Made Any Difference to Carbon Emissions?', *The Guardian*, 26 November 2012, at www.theguardian.com/environment/blog/2012/nov/26/kyoto-protocol-carbon-emissions; S. Marcacci, 'Was the Kyoto a Success or Failure?', *Clean Technica*, 29 December 2011.

⁶ Paris Agreement, Art. 2.1(a).

⁷ IPCC, 'Climate Change 2007: The Synthesis Report', in *Fourth Assessment Report: Climate Change 2007* (2007).

⁸ Paris Agreement, Art. 2.1(a). ⁹ *Ibid.*, Art. 4.1.

¹⁰ M. Doelle, 'The Paris Agreement: Historic Breakthrough or High Stakes Experiment?', 6 *Climate Law* 1 (2016).

multidimensional issue that penetrates deeply into the social and economic fabric of nation states and interfaces with a multitude of other areas of international law. In this respect, climate change poses a critical test for the utility and effectiveness of international environmental regulation more generally and its commitment to advancing sustainable development.

THE CLIMATE CHANGE PROBLEM

The Earth's climate is determined in large part by the presence in the atmosphere of naturally occurring greenhouse gases, including, in particular, water vapour, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and tropospheric ozone (O₃). These are transparent to incoming short-wave solar radiation but absorb and trap longwave radiation emitted by the Earth's surface. Their presence exerts a warming influence on the Earth. Scientific evidence suggests 'unequivocally' that continued increases in atmospheric concentrations of selected greenhouse gases due to human activities leads to an enhanced 'greenhouse effect' and global climatic change.¹¹ Carbon dioxide in emissions from the combustion of fossil fuels, the production of cement, and agricultural and other land use (including deforestation and forest degradation) is widely considered to be the most substantial contribution to the threat of climate change, but global emissions of CFC-11 and 12, methane and nitrous oxide also pose a significant risk.

In 1988, UNEP and the WMO established the Intergovernmental Panel on Climate Change (IPCC) to provide the scientific guidance necessary to take further action.¹² The fifth IPCC report, published in 2014, predicted that, under various 'business-as-usual' emissions scenarios, global mean temperatures could rise by between 3.7 °C and 4.8 °C over the twenty-first century.¹³ Such a rate of increase would be expected to lead to a massive decrease in the areas of sea ice and snow cover, a rise in global mean sea level of between 45 cm and 82 cm by the end of the twenty-first century (not taking into account future rapid dynamic changes in ice flow), more frequent hot and fewer cold temperature extremes and an increased frequency of extreme weather events.¹⁴ In addition, the IPCC report discussed a range of other risks from climate change for natural and human systems, including increased species extinction risk, threats to food security, exacerbation of existing human health risks, reduced water security, heightened risks of conflict, and increased displacement of people.¹⁵ The IPCC concluded:

Without additional mitigation efforts beyond those in place today, and even with adaptation, warming by the end of the 21st century will lead to high to very high risk of severe, widespread and irreversible impacts globally (high confidence).¹⁶

¹¹ IPCC, 'Climate Change 2014: The Synthesis Report', in *Fifth Assessment Report: Climate Change 2014* (2014), 2–3. The 1992 Climate Change Convention defines 'greenhouse gases' as 'those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infra-red radiation' (Art. 1(5)).

¹² The IPCC has produced five reports: in 1990, 1992, 2001, 2007 and 2014. The next report is due in 2021, however, the IPCC has agreed to produce a special report in 2018 on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways.

¹³ IPCC, Summary for Policy Makers in 'Climate Change 2014: The Synthesis Report', in *Fifth Assessment Report: Climate Change 2014*, 20. This is for scenarios without additional efforts to constrain emissions. When climate uncertainty is included, the temperature range is between 2.5 °C and 7.8 °C.

¹⁴ Scenarios modelled using different assumptions about economic growth, implementation of climate policies, etc. (*ibid.*).

¹⁵ *Ibid.*, 13–16. ¹⁶ *Ibid.*, 17.

As indicated in the introduction, an increase in global mean temperature of more than 2 °C above that occurring in pre-industrial times is thought to constitute dangerous global warming, although many scientists and small island states have argued for more precautionary levels of a maximum 1.5 °C increase (now formally recognised in the Paris Agreement) in order to safeguard low-lying areas and to prevent extensive species loss.¹⁷ In its fifth assessment report, the IPCC quantified the ‘carbon budget’ associated with the 2 °C threshold finding that:

limiting total human-induced warming to less than 2 °C relative to the period 1861–1880 with a probability of >66% would require cumulative CO₂ emissions from all anthropogenic sources since 1870 to remain below about 2900 Gt CO₂ (with a range of 2550 to 3150 Gt CO₂ depending on non-CO₂ drivers). About 1900 Gt CO₂ had already been emitted by 2011.¹⁸

This leaves a remaining global carbon budget of approximately 1000 Gt CO₂, which on current emission rates, could be exhausted before the middle of the century.¹⁹ Consequently, successive IPCC reports have called for ‘substantial cuts’ in greenhouse gas emissions in the order of 40 to 70 per cent below 2010 levels by 2050, with global net emissions of CO₂ decreasing to near or below zero by the end of the century.²⁰

Although scientific understanding of the greenhouse effect dates back more than two centuries, with the link to harmful climate change discussed since the mid 1950s,²¹ the climate change problem is one that has proved particularly intractable for international law and policy. Part of the difficulty lies in the multiple, diverse sources, and widespread nature of emissions of greenhouse gases that contribute to global warming and consequent climate change.²² Every state, as well as numerous entities within states, including companies, farms, households and individuals, emit some level of greenhouse gases and thereby contribute to the problem.²³ Moreover, emitting activities are highly diverse and take place in many important sectors of national economies; energy production, industrial activities, transportation and agriculture/forestry being among them. Historically, developed countries were the principal emitters of greenhouse gases, however, more recently, some large developing countries, such as China, India, Brazil, Indonesia and South Africa, have emerged as major emitters. In 2007, for instance, China’s domestic emissions surpassed those of the United States, which remains the leading developed country emitter.²⁴ Nonetheless, global mixing of greenhouse gases such as CO₂ in the upper atmosphere leads to concentrations that are roughly equivalent worldwide. Hence the effects of climate change will be experienced everywhere and not just at locations of highest

¹⁷ The IPCC has calculated that stabilisation of atmospheric carbon dioxide concentrations at about 450 ppm is necessary to have a 50:50 chance of avoiding a 2 °C warming.

¹⁸ IPCC, Summary for Policy Makers in ‘Climate Change 2014: The Synthesis Report’, in *Fifth Assessment Report: Climate Change 2014*, 10.

¹⁹ See World Resources Institute, Infographic: The Global Carbon Budget, March 2014, at www.wri.org/resources/data-visualizations/infographic-global-carbon-budget. This is based on the IPCC’s high emissions scenario, RCP 8.5.

²⁰ IPCC, Summary for Policy Makers in ‘Climate Change 2014: The Synthesis Report’, in *Fifth Assessment Report: Climate Change 2014*, 20.

²¹ See S. Weart, *The Discovery of Global Warming* (Cambridge, MA/London: Harvard University Press, 2008).

²² Data by country and sector can be found at http://unfccc.int/ghg_data/items/3800.php

²³ See <http://unfccc.int/di/DetailedByParty.do> for detailed data for each Convention party.

²⁴ See World Resources Institute CAIT Climate Data Explorer at <http://cait.wri.org>; J. Vidal and D. Adam, ‘China Overtakes US as World’s Biggest CO₂ Emitter’, *The Guardian*, 20 June 2007.

emissions. Indeed, some of the severest impacts of climate change are likely to be experienced in states and by communities that have made the least contribution to the global problem in terms of their own emissions,²⁵ a situation that has been characterised as one of 'climate injustice'.²⁶

DEVELOPMENT OF THE CLIMATE CHANGE REGIME²⁷

Having determined that 'climate change is a common concern of mankind' in 1988 and 1989, the negotiation of a treaty to address climate change and its effects was formally set in motion by the UN General Assembly and the specialised agencies.²⁸ The UN Framework Convention on Climate Change (1992 Climate Change Convention) was signed by 155 states and the EU in June 1992 at UNCED. It comprised a package that contained elements for almost all the negotiating states but left none entirely satisfied.²⁹ Instead, the Convention reflected a compromise between those states which were seeking specific targets and timetables for emission reductions, and those which wanted only a 'bare-bones' skeleton treaty which could serve as the basis for future Protocols, like the 1985 Vienna Convention. In 1997, the Kyoto Protocol was adopted, establishing more detailed commitments for developed parties for the first commitment period, 2008–12. Delays in states' ratification of the Protocol, coupled with the rejection of the treaty by the United States, meant that it only came into force in 2005. In 2011, parties to the Kyoto Protocol agreed to extend it to a second commitment period, running from 2013 to 2020, however, the necessary amendment for this extension has not yet come into force.

Between 2005 and 2015, the international climate change regime was in a process of lengthy negotiation as parties to the Climate Change Convention and the Kyoto Protocol sought to agree on arrangements to govern, initially, the post-2012 and post-2015 periods, and then the post-2020 period. The 2015 Paris Agreement represents the culmination of this negotiation process and lays down a framework for the management of climate change from 2020 onwards. Unlike the time-limited Kyoto Protocol, the Paris Agreement provides for an ongoing process of national submission of climate actions, review and progressive revision that will continue

²⁵ IPCC, *Climate Change 2014: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2014).

²⁶ International Bar Association, 'Achieving Justice and Human Rights in an era of Climate Disruption' *Climate Change Justice and Human Rights Task Force Report*, 5 July 2014.

²⁷ See, generally, UNFCCC website at <http://unfccc.int>

²⁸ UNGA Res. 43/53 (1988); UNGA Res. 44/207 (1989). The political process leading to the negotiation of a legal instrument was given further impetus by the 1990 Ministerial Declaration of the Second World Climate Conference, UN Doc. A/45/696/Add.1, Annex III (1990), which called for negotiations on an effective framework convention on climate change containing appropriate commitments to begin without delay. In December 1990, the UN General Assembly established a single intergovernmental negotiating process under the auspices of the General Assembly, supported by UNEP and WMO, for the preparation by an Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC) (UNGA Res. 45/221 (1990)). The INC/FCCC held five sessions, and the Framework Convention was adopted at the close of the resumed fifth session in May 1992. For further details of the history of the Convention's negotiating process, see P. Sands, 'The United Nations Framework Convention on Climate Change', 1 *Review of European Community and International Environmental Law* 270 (1992); D. Bodansky, 'The United Nations Framework Climate Change Convention: A Commentary', 18 *Yale Journal of International Law* 451 (1993); I. Mintzer and J. Leonard (eds.), *Negotiating Climate Change: The Inside Story of the Rio Convention* (Cambridge: Cambridge University Press, 1994); D. Bodansky, 'The United Nations Framework Convention on Climate Change: A Commentary on a Commentary', 25(2) *Yale Journal of International Law* 315 (2000).

²⁹ *United Nations Framework Convention on Climate Change*, opened for signature 9 May 1992, 31 ILM 849 (entered into force on 24 March 1994) (1992 Climate Change Convention), Art. 23(1). The Convention attracted twenty-six ratifications within a year of its adoption, and it currently enjoys near universal participation with 197 parties.

indefinitely into the future. Rather than targets and timetables for emissions reductions enshrined in international law, the hallmark of the Paris Agreement is its 'bottom-up approach', with the scope of mitigation and adaptation actions to be determined by individual parties according to their domestic political and economic priorities.

While the Paris Agreement establishes a new regime for the future management of climate change, this regime rests on the foundations of – and is intended to extend – the provisions of the Climate Change Convention. Decisions taken by the Conference of the Parties (COP) to the Climate Change Convention, as well as provisions of the Kyoto Protocol in respect of parties to it, continue to govern parties' actions, especially in the pre-2020 period. Moreover, as the Paris Agreement indicates, its processes of review and transparency, as well as the scope it provides for 'voluntary cooperation in the implementation' of national climate actions, are intended to build on the experience developed with similar mechanisms under the Convention and Kyoto Protocol. The following sections therefore provide a brief overview of the 1992 Climate Change Convention and 1997 Kyoto Protocol before turning to discuss the new requirements that will apply from 2020 under the 2015 Paris Agreement.

1992 Climate Change Convention

The 1992 Climate Change Convention went beyond the scope of the 1985 Vienna Convention, which took nearly three times as long to negotiate among a smaller group of states. Indeed, the word 'Framework' in the title is something of a misnomer, since the 1992 Convention established:

- (1) a general commitment to stabilise greenhouse gas concentrations in the atmosphere at a safe level, over the long term, and to limit emissions of greenhouse gases by developed countries in accordance with soft targets and timetables;
- (2) a financial mechanism and a commitment by certain developed country parties to provide financial resources for meeting certain incremental costs and adaptation measures;
- (3) two subsidiary bodies to the Conference of the Parties; and
- (4) a number of important guiding 'Principles'.

There were 143 states participating in the final negotiating session for the Convention, which was unprecedented in the potential scope of its direct and indirect consequences. Affecting the vital economic interests of almost all states, it attempted to adopt a comprehensive approach to integrating environmental considerations into economic development and defined, in legal terms, rights and obligations of different members of the international community in the quest for 'sustainable development' and the protection of the global climate.³⁰ The differing economic capacities of developed countries, and, in particular, the problems faced by the former socialist countries of central and eastern Europe, led to a novel distinction being drawn in the Convention: for the purposes of differentiating specific commitments relating to sources and sinks,³¹

³⁰ The relationship between the Climate Change Convention and vital national economic, social and environmental interests was evident from the different interest groups of states which emerged during the negotiations. For a discussion of the various country groupings and their interests, see the second edition of this book (pp. 360–1).

³¹ Under the Convention, a 'source' is 'any process or activity which releases a greenhouse gas, aerosol or precursor of a greenhouse gas into the atmosphere' (Art. 1(9)); a 'sink' is 'any process, activity or mechanism which removes a greenhouse gas or a precursor of a greenhouse gas from the atmosphere' (Art. 1(8)).

and those relating to finance, a distinction was drawn between all developing country parties and developed country parties (included in Annex I)³² and those developed country parties and developed parties not ‘undergoing the process of transition to a market economy’ (listed in Annex II).³³

Preamble, Definitions, Objective and Principles

The Convention’s Preamble reflects a wide range of interests, including matters jettisoned from the ‘Principles’ due to lack of consensus. For instance, it expressly recognises ‘the principle of sovereignty’, that the largest share of historical and current global emissions originated in developed countries, and included (for the first time in a treaty) Principle 2 of the Rio Declaration (rather than Principle 21 of the Stockholm Declaration). The Preamble also refers to the concepts of ‘per capita emissions’ and ‘energy efficiency’, matters that did not receive sufficient support to be included in the operational part of the Convention. Of note in the definitions Article is the omission of the concept of ‘net emissions’ (sources minus sinks, but no agreement was possible on whether to include natural sinks such as oceans), and a footnote to the title of the first Article (Article 1, ‘Definitions’) which states that: ‘Titles of articles are included solely to assist the reader.’³⁴

The ultimate objective of the Climate Change Convention is to stabilise greenhouse gas concentrations in the atmosphere ‘at a level that would prevent dangerous anthropogenic interference with the climate system’.³⁵ Although ‘dangerous anthropogenic interference’ is not defined in the Convention, as discussed above, scientific evidence has increasingly converged on 2 °C warming (or a lower figure such as 1.5 °C) above pre-industrial levels as the best indicator in this regard.³⁶ This statement of the Convention’s objective emphasises that prevention of climate change is the primary goal. However, the Convention implicitly recognised that some climate change is inevitable, since the objective is to be achieved within a timeframe sufficient to allow ‘ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner’.³⁷ Moreover, the Convention includes numerous references to the ‘effects’ and ‘adverse

³² Annex I lists all the OECD countries as at 1992 and the EU, together with Liechtenstein and Monaco (designated by the term ‘developed party’, apparently for the first time in international law), plus several former socialist countries: Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia and Ukraine. Albania, Yugoslavia and certain members of the Commonwealth of Independent States appear in neither Annex and must therefore be deemed to be developing countries within the meaning of the Convention. See also Decision 4/CP.3, Report of the Conference of the Parties on Its 3rd Session, Kyoto, 1–10 December 1997, FCCC/CP/1997/7/Add.1.

³³ Annex II lists all OECD member countries as at 1992 (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States) and the EU. At COP7, the parties removed Turkey from Annex II: see Decision 26/CP.7, Report of the Conference of the Parties on Its 7th Session, 29 October to 10 November 2001, Marrakech, FCCC/CP/2001/13/Add.4.

³⁴ On the possible legal consequences of this footnote, see Chapter 4, p. 111. The Paris Agreement provides that the definitions contained in Article 1 of the Convention apply also to the Agreement, Paris Agreement, Art. 1.

³⁵ Art. 2. The ‘climate system’ is defined as ‘the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions’ (Art. 1(3)); ‘climate change’ is ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’ (Art. 1(2)).

³⁶ See Decision 1/CP.16, Cancún Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention, FCCC/CP/2010/7/Add.1, I.4.

³⁷ Art. 2.

effects' of climate change (twenty-two times), and to 'vulnerability' and 'impacts' (seven times), suggesting that it also has the additional, but unstated, objective of establishing an instrument to address the adverse effects of climate change and ensure that countries, particularly those most vulnerable, are able to prepare adequately for adaptation to the adverse effects of climate change.³⁸ The objective of the Climate Change Convention remains relevant for the post-2020 period given the Paris Agreement's declared intent of 'enhancing the implementation of the Convention, including its objective.'³⁹

Article 3 of the Convention sets out a number of 'Principles' to guide the parties in achieving the objective and implementing the provisions of the Convention. The obligation of parties to protect the climate system is 'on the basis of equity' and 'in accordance with their common but differentiated responsibilities and respective capabilities', in accordance with which developed country parties should take the lead.⁴⁰ Parties were also directed to adopt measures and policies which are 'precautionary', 'cost-effective' and 'comprehensive', and which take into account different 'socio-economic contexts'.⁴¹ Climate change policies were also to be integrated with national development programmes, and measures to combat climate change 'should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade'.⁴² Finally, throughout the 'Principles' section, and elsewhere in the Convention, reference is made to the need to ensure 'sustainable economic growth' in order to address the problems of climate change.

The continuing relevance of the Convention's Principles for the post-2020 period is left unclear by the Paris Agreement, although the preamble to the Agreement refers to 'pursuit of the objective of the Convention, and being guided by its principles'. The Agreement also provides that it 'will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'.⁴³ The significance of the addition of the phrase 'in the light of different national circumstances' is uncertain, although some commentators have suggested it introduces greater flexibility to the concept.⁴⁴

General Commitments

To achieve the objectives of the Convention, all parties committed under Article 4(1) to take certain measures, taking into account their common but differentiated responsibilities and priorities, objectives and circumstances. These general commitments included the development of national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol,⁴⁵ and the formulation and implementation of national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing emissions and removals of these gases and by facilitation of adequate adaptation to climate change.⁴⁶ All parties were also required: to promote, and cooperate in the diffusion of, technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol;

³⁸ 'Adverse effects of climate change' means 'changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare' (Art. 1(1)).

³⁹ Paris Agreement, Art. 2(1). ⁴⁰ Art. 3(1). ⁴¹ Art. 3(3). ⁴² Art. 3(5). ⁴³ Art. 2(2).

⁴⁴ See Doelle, 'Paris Agreement'. ⁴⁵ Art. 4(1)(a). ⁴⁶ Art. 4(1)(b).

to promote sustainable management, conservation and enhancement of sinks and reservoirs of these greenhouse gases; and to cooperate in preparing for adaptation to the impacts of climate change.⁴⁷ All parties were directed to take climate change into account, to the extent feasible, in their social, economic and environmental policies; to promote and cooperate in research, systematic observation and development of data archives to the further understanding of climate change and response strategies; to promote and cooperate in full, open and prompt exchange of relevant information, and to promote and cooperate in education, training and public awareness.⁴⁸

Reporting

The Convention established broad reporting requirements for the communication of certain information, with specific provision for financial resources to be made available to developed country parties. All parties were required to communicate, to the Conference of the Parties: information on implementation; a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol; a general description of steps taken or envisaged to implement the Convention; and any other relevant information including that relevant for calculating global emissions trends.⁴⁹ The effective implementation by developing country parties of their communication commitments was linked to the effective implementation by developed country parties of their financial commitments, including the need for adequacy and predictability in the flow of funds.⁵⁰ Annex I parties were to include information relating to measures and policies to fulfil commitments under Article 4(2)(a) and (b), and a specific estimate of the effects of those policies and measures on emissions and removals by the year 2000.⁵¹ Annex II parties were required to provide details of measures taken in accordance with Article 4(3), (4) and (5).⁵²

Initial communications for each Annex I party were required within six months of the entry into force of the Convention for that party, and most have now reported six times.⁵³ For all other parties, reports were to be made within three years of entry into force for that party, or upon the availability of financial resources under Article 4(3), and least developed country parties could make their initial communications at their discretion. The timetable for subsequent communications is set by the Conference of the Parties.⁵⁴ Article 12 also provides for joint communication by a group of parties, for the protection of confidential information, and for making communications public.⁵⁵ The new 'enhanced transparency framework for action and support' established under the Paris Agreement is intended to draw on the transparency arrangements under the Convention and to build on this experience.⁵⁶

⁴⁷ Art. 4(1)(c)–(e); a 'reservoir' is defined as 'a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored' (Art. 1(7)).

⁴⁸ Art. 4(1)(f)–(i). ⁴⁹ Arts. 4(1)(j) and 12(1). ⁵⁰ Art. 4(3) and (7). ⁵¹ Art. 12(2). ⁵² Art. 12(3).

⁵³ National reports available at: http://unfccc.int/national_reports/items/1408.php

⁵⁴ Art. 12(5), Decisions 9/CP.2 and 10/CP.2 of the second Conference of the Parties established guidelines, a schedule and a process for consideration of communications from Annex I and non-Annex I parties (see Report of the Conference of the Parties on Its 2nd Session, Geneva, 8–19 July 1996, FCCC/CP/1996/15/Add.1, 29 October 1996). The reporting guidelines were substantially revised by the fifth Conference of the Parties (see Decisions 3/CP.5 and 4/CP.5, Report of the Conference of the Parties on Its 5th Session, Bonn, 25 October–5 November 1999, FCCC/CP/1999/6/Add.1, 17 January 2000). Most developing country parties had submitted at least one national communication by January 2009; see UNFCCC, Fact Sheet: UNFCCC Emissions Reporting, https://unfccc.int/files/press/backgrounders/application/pdf/fact_sheet_unfccc_emissions_reporting.pdf

⁵⁵ Art. 12(8)–(10). ⁵⁶ Paris Agreement, Art. 13(1) and (3).

Specific Commitments: Sources and Sinks

At the heart of the Convention were its specific commitments relating to sources and sinks of greenhouse gases binding on all developed country parties and the EU under Article 4(2). However, the extent of these commitments was unclear as a result of the convoluted language agreed to by way of compromise between various OECD members, and the different interests in and between developed and developing countries. Their importance, nonetheless, lay in their being the only source of emission reduction commitments binding on non-parties to the Kyoto Protocol, such as the United States. The relevant provisions of the opaque language of Article 4 (2) provided:

- (a) Each [Annex I party] shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of this Convention, recognising that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification; and taking into account the differences in these parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual circumstances, as well as the need for equitable and appropriate contributions by each of these parties to the global effort regarding that objective. These parties may implement such policies and measures jointly with other parties and may assist other parties in contributing to the achievement of the Convention and, in particular, that of this sub-paragraph;
- (b) In order to promote progress to this end, each [Annex I party] shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in sub-paragraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in sub-paragraph (a), with the aim of returning individually or jointly to their 1990 levels of these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol.

Even when read together, these two paragraphs did not reflect a clear commitment to stabilise carbon dioxide and other greenhouse gas emissions by the year 2000 at 1990 levels, as advocated by the EU and others during the negotiations. The most that could reasonably be said of these provisions was that they established soft targets and timetables with many loopholes. At the first Conference of the Parties, the adequacy of Article 4(2)(a) and (b) was reviewed with agreement 'to begin a process to enable [the Conference of the Parties] to take appropriate action for the period beyond 2000, including the strengthening of the commitments of the Parties included in Annex I to the Convention (Annex I Parties) in Article 4, paragraph 2(a) and (b), through the adoption of a protocol or another legal instrument'.⁵⁷ This process led to the adoption of a

⁵⁷ In accordance with Art. 2(4)(d), a second review of the adequacy of Art. 4(2)(a) and (b) took place during the fourth Conference of the Parties at Buenos Aires in 1998. The parties failed to reach a decision on the review and subsequent consideration of the matter at the fifth and sixth Conferences of the Parties has similarly produced no agreed result.

Protocol to the Convention at the third Conference of the Parties in Kyoto in 1997 (discussed further below).⁵⁸

The Convention provided for 'joint implementation' by Annex I parties of their policies and measures, subject to further decisions to be taken by the Conference of the Parties regarding criteria for such 'joint implementation'.⁵⁹ The Convention additionally required that 'a certain degree of flexibility' should be allowed to developed country parties 'undergoing the process of transition to a market economy'.⁶⁰ Parties were also to take into consideration in the implementation of commitments the situation of parties, particularly developing country parties, with economies vulnerable to the adverse effects of implementation of response measures.⁶¹

The calculation of emissions by sources and removal by sinks was to take into account the best available scientific knowledge, in accordance with the common methodologies determined by the Conference of the Parties.⁶² Each developed country party was also required to coordinate relevant economic and administrative instruments and identify and periodically review its own policies and practices that encourage activities that lead to greater levels of anthropogenic emissions.⁶³

Commitments: Financial Resources and Technology Transfer

Annex II parties (the developed countries that form a subset of the parties listed in Annex I) undertook specific financial commitments. They agreed to provide 'new and additional' financial resources to meet the 'agreed full costs' incurred by developing country parties in fulfilling their commitment to communicate information relating to implementation,⁶⁴ and to provide such financial resources needed by developing country parties 'to meet the agreed full incremental costs of implementing measures' relating to their general commitments under Article 4(1) and which are agreed between the developing country party and the entity responsible for the financial mechanism.⁶⁵ Annex II parties also agreed to assist developing country parties 'particularly vulnerable to the adverse effects' of climate change in meeting the costs of adaptation to those adverse effects,⁶⁶ in what amounted to an implicit acceptance by developed country parties of responsibility for causing climate change.

The second review of the adequacy of Art. 4(2)(a) and (b) was 'held in abeyance' at COP 16, Report of the Conference of the Parties on Its 16th Session, Cancún, 29 November to 10 December 2010, FCCC/CP/2010/7/Add.1.

⁵⁸ See Decision 1/CP.3, Report of the Conference of the Parties on Its 3rd Session, Kyoto, 1–11 December 1997, FCCC/CP/1997/7/Add.1.

⁵⁹ Art. 4(2)(a) and (d). At its first session, the Conference of the Parties launched a 'pilot phase of activities implemented jointly' (AIJ) (see Decision 5/CP.1, Report of the Conference of the Parties on Its First Session, Berlin, 28 March–7 April 1995, FCCC/CP/1995/7/Add.1). Under the pilot phase, parties could implement projects that reduce greenhouse gas emissions, or enhance removals of greenhouse gases by 'sinks', in the territories of other parties, although no credits could accrue to any party for greenhouse gas emission reductions or removals. In 2000, COP 5 decided to continue the pilot phase beyond 2000 (see Decision 13/CP.5) and in 2006, at its twelfth session, the Conference of the Parties agreed on the continuation of the AIJ under the pilot phase. See http://unfccc.int/cooperation_support/activities_implemented_jointly/items/2307.php

⁶⁰ Art. 4(6). ⁶¹ Art. 4(10).

⁶² Art. 4(2)(c). See also Decision 4/CP.1 on Methodological Issues, Report of the Conference of the Parties on Its First Session, Berlin, 28 March–7 April 1995, FCCC/CP/1995/7/Add.1. Since then, the UNFCCC Secretariat has prepared a note on methodological issues: UNFCCC, Methodological Issues. Review of Methodological Work under the Convention and the Kyoto Protocol: Note by the Secretariat (2002). There have also been several workshops: see e.g. UNFCCC, Report on the Workshop on Methodological Issues Relating to Reducing Emissions from Deforestation and Forest Degradation in Developing Countries: Note by the Secretariat (2008), <http://unfccc.int/resource/docs/2008/sbsta/eng/11.pdf>

⁶³ Art. 4(2)(e). ⁶⁴ Art. 12. ⁶⁵ Art. 4(3). ⁶⁶ Art. 4(4).

In the implementation of Article 4, the parties were required to give full consideration to the actions necessary to meet the specific needs and concerns of developing country parties arising from the adverse effects of climate change, and/or the impact of implementing response measures, including actions related to funding, insurance and the transfer of technology.⁶⁷ Certain categories of countries were identified, including small island countries, countries with low-lying coastal areas, countries with areas liable to drought and desertification, and countries whose economies are highly dependent on income generated from, or the consumption of, fossil fuels.

Annex II parties were required to take all practicable steps to promote, facilitate and finance the transfer of, or access to, environmentally sound technologies and know-how, and to support the development of endogenous capacities and technologies of developing country parties.⁶⁸

Institutional Arrangements

The Climate Change Convention established a Conference of the Parties, a secretariat, two subsidiary bodies and a financial mechanism.⁶⁹ The Conference of the Parties (COP) is the supreme body of the Convention, entrusted with keeping the implementation of the Convention under regular review and making decisions to promote its effective implementation.⁷⁰ It met for the first time in 1995 and has subsequently met annually.⁷¹ The Conference of the Parties also served as the primary negotiating forum for the international climate negotiations process that led to conclusion of the Paris Agreement. The functions of the Conference of the Parties include:

- to examine periodically the obligations of the parties;
- to facilitate the coordination of measures;
- to promote and guide comparable methodologies for preparing inventories of greenhouse gas emissions;
- to assess the implementation of the Convention by all parties and the overall effect of measures; and
- to adopt regular reports on the implementation of the Convention.

A multidisciplinary Subsidiary Body for Scientific and Technological Advice was established to provide information on scientific and technological matters to the Conference of the Parties.⁷² A Subsidiary Body for Implementation was established to assist the Conference of the Parties in the assessment and review of the implementation of the Convention.⁷³ Although some states wanted to limit participation, both subsidiary bodies are open to participation by all parties.

The Convention defined a financial mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology.⁷⁴ After specific commitments this was the most disputed aspect of the Convention. The mechanism functions under the guidance of, and is accountable to, the Conference of the Parties, which is responsible for its policies, programme priorities and eligibility criteria.⁷⁵ The mechanism is required to have an

⁶⁷ Art. 4(8) and (9). ⁶⁸ Art. 4(5).

⁶⁹ Arts. 7–11. Several expert groups also exist to support work under the Convention. These include: a Consultative Group of Experts on National Communications from Non-Annex I Parties; a Least Developed Country Expert Group; and an Expert Group on Technology Transfer.

⁷⁰ Art. 7(2). ⁷¹ Art. 7(4). ⁷² Art. 9(1). ⁷³ Art. 10(1). ⁷⁴ Art. 11(1).

⁷⁵ Art. 11(1)–(3). In 1998, the fourth Conference of the Parties entrusted the GEF with the operation of the financial mechanism on a long-term basis, subject to review every four years. See Decision 3/CP.4, Report of the Conference of the Parties on Its 4th Session, Buenos Aires, 2–14 November 1998, FCCC/CP/1998/16/Add.1. Four reviews of the

equitable and balanced representation of all parties within a transparent system of governance.⁷⁶ Operation of the mechanism was originally entrusted to the Global Environmental Facility (GEF) but now operates under the auspices of the Green Climate Fund. The Convention's Financial Mechanism remains central to the post-2020 arrangements as the designated financial mechanism of the Paris Agreement.⁷⁷

Implementation and Dispute Settlement

Apart from the role of the Conference of the Parties and the Subsidiary Body for Implementation, the Convention provided for the possibility of establishing a 'multilateral consultative process' for the resolution of implementation questions, to be available to parties on their request.⁷⁸ Although potentially innovative, no agreement was ever reached by Convention parties on the elements of this process.⁷⁹ Additionally, a dispute settlement Article provided for possible compulsory recourse to arbitration or the International Court of Justice with the consent of the relevant parties to a dispute, as well as the possibility for the compulsory establishment of a conciliation commission, with the power to make a recommendatory award, at the request of one of the parties to a dispute twelve months after notification of the dispute.⁸⁰ The Convention provided for amendment, the adoption and amendment of Annexes, and the adoption of Protocols.⁸¹ No reservations were permitted.⁸²

The 1997 Kyoto Protocol

The Kyoto Protocol to the Climate Change Convention was adopted by the third Conference of the Parties in December 1997.⁸³ Negotiations for a Protocol to the Convention commenced in 1995 after the first Conference of the Parties, meeting in Berlin, determined that the commitments provided for in Article 4(2)(a) and (b) of the Convention were 'not adequate' and decided to launch a process to strengthen the commitments of Annex I parties through the adoption of a protocol or another legal instrument.⁸⁴ The 'Berlin Mandate' was to:

[a]im, as the priority in the process of strengthening the commitments in Article 4.2(a) and (b) of the Convention, for developed country/other Parties included in Annex I, both to elaborate policies and measures, as well as to set quantified limitation and reduction objectives within specified timeframes, such as 2005, 2010 and 2020, for their anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol.⁸⁵

financial mechanism have been undertaken, with the last review being adopted by COP 16: Decision 2/CP.16. The GEF remains an operating entity.

⁷⁶ Art. 11(2). ⁷⁷ Paris Agreement, Art. 9.8. ⁷⁸ Art. 13.

⁷⁹ Draft terms of reference were proposed in 1998, see Decision 10/CP.4, Report of the Conference of the Parties on Its 4th Session, Buenos Aires, 2-14 November 1998, FCCC/CP/1998/16/Add.1.

⁸⁰ Art. 14. ⁸¹ Art. 24. ⁸² Art. 24.

⁸³ *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, signed 10 December 1997, 37 ILM 22 (entered into force 16 February 2005) ('Kyoto Protocol').

⁸⁴ See Decision 1/CP.3, Report of the Conference of the Parties on Its 3rd Session, Kyoto, 1-11 December 1997, FCCC/CP/1997/7/Add.1.

⁸⁵ Decision 1/CP.1, Report of the Conference of the Parties on Its 1st Session, Berlin, 28 March-7 April 1995, FCCC/CP/1995/7/Add.1, para. 2(a).

Key to the negotiating process was that it was not intended to introduce any new commitments for non-Annex I parties, but merely to 'reaffirm existing commitments in Article 4.1 and continue to advance the implementation of these commitments'.⁸⁶ This 'firewall' between the commitments of developed and developing countries though ultimately proved unsustainable in light of opposition from major developed country emitters (such as the United States, which subsequently refused to ratify the Protocol)⁸⁷ and rapid emissions growth in a number of large developing countries (such as China). In the Paris Agreement, the 'firewall' has been replaced by a commitment on behalf of *all* parties to contribute to the global response to climate change.⁸⁸

While the Kyoto Protocol eventually entered into force in February 2005, without the participation of the United States and major developing country emitters it delivered only modest emissions reductions during its first commitment period (2008–12) and failed to limit global emissions growth.⁸⁹ In international legal terms, the achievements of the Kyoto Protocol were more significant. In particular, Kyoto Protocol parties agreed on a detailed set of rules for implementation of the treaty – known as the 'Marrakesh Accords'⁹⁰ – that are likely to form the basis for implementation arrangements in many areas under the Paris Agreement. Key provisions of the Marrakesh Accords concerned the rules for implementation of the Kyoto Protocol's 'flexibility mechanisms', elaboration of permissible activities regarding carbon sinks (known as land-use, land-use change and forestry (LULUCF) activities) and the establishment of an innovative compliance mechanism.⁹¹ In addition, the Accords provided guidelines on national systems for the estimation of anthropogenic sources of greenhouse gas emissions, the preparation of information required for fulfilment of the reporting obligations under the Protocol, and performance of reviews by expert review teams under Article 8;⁹² experience that will be highly relevant to the design of similar mechanisms under the Paris Agreement.

Emission Reduction Targets and Timetable

The major achievement of the Kyoto Protocol was the commitment of Annex I parties to quantified emission reduction targets and a timetable for their achievement. The basic obligation accepted by the Annex I parties was set out in Article 3(1), providing that Annex I parties 'shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts'.⁹³ The 'assigned amounts' were calculated pursuant to each party's quantified emissions limitation and reduction commitment set out in Annex B. Annex I parties were required to implement their

⁸⁶ *Ibid.*, para. 2(b).

⁸⁷ See Transcript, Bush Press Conference at White House, 28 March 2001, available at <https://georgewbush-whitehouse.archives.gov/news/briefings/20010328.html>

⁸⁸ Paris Agreement, Art. 3. ⁸⁹ Clark, 'Has the Kyoto Protocol Made any Difference to Carbon Emissions?'

⁹⁰ The Marrakesh Accords are reproduced in four volumes of the report of the seventh Conference of the Parties, Marrakesh, 29 October–9 November 2001, FCCC/CP/2001/13/Add.1–Add.4 ('Marrakesh Accords'). For a useful summary of the Kyoto Protocol provisions as supplemented by the Marrakesh Accords, see Climate Change Secretariat, *A Guide to the Climate Change Process* (2002), available at <http://unfccc.int/resource/process/guideprocess-p.pdf>

⁹¹ See Decision 27/CMP.1, Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol, 28 November to 9 December 2005, Montreal, FCCC/KP/CMP/2005/8/Add.3 (see Chapter 4).

⁹² See Decisions 19/CMP.1, 15/CMP.1 and 22/CMP.1, Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol (n. 91).

⁹³ The gases covered by the Protocol are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

obligation under Article 3(1) 'with a view to reducing their overall emissions of [Annex A] gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012'. Annex I parties with economies in transition were permitted to use a base year other than 1990, calculated in accordance with Article 3(5). Banking of assigned amounts for future commitment periods was permitted as any Annex I party with emissions in a commitment period, which were less than its assigned amount, could request that the difference be added to its assigned amount for subsequent commitment periods.⁹⁴ The emission reduction commitments made in the Protocol were estimated at the time to represent a reduction of about 30 per cent below 'business-as-usual' emissions levels. While developed country parties managed to cut emissions collectively by 16 per cent in the first commitment period from 1990 levels, globally emissions surged by 50 per cent over the same period due to emissions growth in many parts of the developing world.⁹⁵

The determination of emissions targets for the Annex I parties was a difficult issue. Annex B listed differentiated targets for individual countries and regional economic organisations. For example, the EU and its member states agreed to an emissions limitation of 92 per cent of the 1990 base year, or an 8 per cent reduction in the first commitment period of 2008–12. The United States agreed to a 7 per cent reduction. Japan and Canada each accepted a 6 per cent reduction, while Australia and Iceland were permitted to make increases of respectively 8 per cent and 10 per cent. Russia, the largest emitter of the Eastern bloc countries, agreed to stabilise its emissions at 100 per cent of 1990 levels.

Six gases were covered by the emission reduction commitments of the Annex I parties: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.⁹⁶ The number of gases covered by the Protocol was also a controversial issue with strong disagreement during the negotiations as to whether only three (carbon dioxide, methane and nitrous oxide) or six (adding hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) gases should be covered. In the end, all six gases were listed in Annex A. However, Article 3(8) provided that any Annex I party could use 1995 as its base year for the latter three gases.

Policies and Measures

Article 2 of the Protocol contains a list of policies and measures that parties could implement in order to achieve their quantified limitation and emission reduction targets. During negotiations for the Protocol, the EU pushed for the adoption of mandatory and coordinated 'policies and measures', but this was resisted by the United States, Canada, Australia and some other Annex I parties who sought a more flexible approach, with policies and measures to be determined principally by each individual party. This latter approach was largely adopted in Article 2, which provides that each Annex I party, in achieving its emissions limitation and reduction commitments under Article 3, shall implement policies and measures 'in accordance with its national circumstances'. A list of indicative measures follows, which includes enhancement of energy efficiency, the protection and enhancement of sinks, the promotion of sustainable forms of agriculture, increased research on and use of new and renewable forms of energy, measures to

⁹⁴ Kyoto Protocol, Art. 3(3). However, borrowing assigned amounts from future commitment periods is not permitted.

⁹⁵ Q. Schiermeier, 'The Kyoto Protocol: Hot Air', *Nature*, 28 November 2012, at www.nature.com/news/the-kyoto-protocol-hot-air-1.11882

⁹⁶ Kyoto Protocol, Annex A.

limit or reduce emissions in the transport sector and the limitation or reduction of methane emissions.⁹⁷ Parties are required to cooperate ‘to enhance the individual and combined effectiveness of their policies and measures’ through taking steps to share relevant experience and information, including developing ways of improving the compatibility, transparency and effectiveness of policies and measures.⁹⁸ Parties were also instructed to pursue limitation and reduction of emissions from aviation and bunker fuels in efforts outside the scope of the Protocol, by working through the ICAO and IMO, respectively.⁹⁹

Flexibility Mechanisms: Emissions Trading, Joint Implementation and the CDM

By far the most innovative (and controversial) aspect of the Kyoto Protocol negotiations was the proposal to enable Annex I parties to meet their commitments under the Protocol via various ‘flexibility mechanisms’ that involve purchasing or acquiring credits representing greenhouse gas reductions in other countries. Although these flexibility mechanisms are not specifically replicated in the Paris Agreement, they remain relevant given the Agreement’s recognition of voluntary ‘cooperative approaches’ that may involve ‘internationally transferred mitigation outcomes’.¹⁰⁰ It is likely that such approaches, including the contemplated new mechanism to be established under Article 6 of the Agreement, will build on the Protocol’s experience with the use of flexibility mechanisms.

Emissions trading under the Protocol permitted an Annex B party to ‘buy’ emission reduction credits, in the form of assigned amount units (AAUs), from another Annex B party where more cost-effective for it to do so rather than to undertake the reduction domestically. The inclusion of emissions trading in the Protocol was strongly supported by the United States, which has domestic experience with similar schemes (although in more discrete areas such as sulphur dioxide emissions)¹⁰¹ and advocated their adoption internationally as cost-effective means of achieving reductions of emissions in greenhouse gases. However, emissions trading was strongly opposed by many parties, particularly China and the Group of 77 developing countries. An eleventh-hour compromise text was included in the Protocol as Article 17. This allowed Annex B parties to ‘participate in emissions trading for the purposes of fulfilling their commitments under Article 3’, but provided that any such trading must be ‘supplemental’ to domestic actions taken to achieve emission reductions.

A further economic incentive mechanism included in the Protocol allowed joint implementation by Annex I parties of their emission reduction commitments. Article 6 provided that, for the purpose of meeting its commitments under Article 3, any Annex I party could transfer to, or acquire from, any other Annex I party ‘emission reduction credits resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in any sector of the economy’.¹⁰² An Annex I party was permitted to authorise private legal entities, under its responsibility, to participate in actions leading to the generation, transfer or acquisition of emission reduction units (ERUs) from joint implementation.¹⁰³ However, any such joint implementation was required to result in a reduction in

⁹⁷ Art. 2(1)(a). ⁹⁸ Art. 2(1)(b).

⁹⁹ For further information on the work of ICAO and IMO in addressing greenhouse gas emissions from air travel and shipping respectively, see pp. 332–4.

¹⁰⁰ Art. 6.2.

¹⁰¹ For example, its sulphur dioxide emissions trading scheme under Title IV of the Clean Air Act, 42 USC 7651.

¹⁰² Art. 6(1). ¹⁰³ Art. 6(3).

emissions by sources, or an enhancement of removals by sinks, that was additional to any that would otherwise occur and had to be supplemental to domestic actions.¹⁰⁴

The Clean Development Mechanism (CDM) defined by Article 12 provided a further innovation, establishing a means for Annex I parties to gain emission reductions credits to assist them in achieving compliance with their quantified emissions limitation and reduction commitments under Article 3. As part of the CDM, Annex I parties invest in emission reduction projects in non-Annex I parties and use the certified emission reductions (CERs) accruing from such project activities 'to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3'.¹⁰⁵ However, the CDM served a broader purpose: it was also designed 'to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention'.¹⁰⁶ Certified emission reductions obtained between 2000 and 2005 could be used to assist in achieving compliance in the first commitment period.¹⁰⁷ A share of the proceeds from certified project activities was required to cover administrative expenses 'as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation'.¹⁰⁸

The CDM is subject to the authority and guidance of the Conference of the Parties serving as the Meeting of the Parties to the Protocol and is supervised by an Executive Board.¹⁰⁹ Emission reductions resulting from project activities require certification by operational entities designated by the Conference of the Parties serving as the Meeting of the Parties to the Protocol on the basis of various factors, including that the reductions in emissions are additional to any that would occur in the absence of the certified project activity and that there are real, measurable and long-term benefits related to the mitigation of climate change.¹¹⁰ As with joint implementation, participation in the CDM may involve private and/or public entities, subject to the guidance of the Executive Board.¹¹¹

The Marrakesh Accords contained a number of decisions relating to implementation of the Protocol's flexibility mechanisms that were subsequently adopted by the first Meeting of the Parties. As a whole, the Marrakesh Accords do not place a numerical cap on the use of the flexibility mechanisms to fulfil emission reduction commitments, as was urged by the EU, developing countries and many environmental NGOs; instead, it was provided that the use of these mechanisms is to be 'supplemental to domestic action' and that domestic action must constitute a 'significant element' of the effort made by Annex I parties in meeting their commitments under Article 3(1) of the Protocol.¹¹² While there was thus no quantitative limit on *acquiring* credits to use towards fulfilling emission reduction commitments, the parties did agree to adopt a safeguard against the *over-selling* of emission reduction credits by participating countries. All Annex I parties were required to keep a 'Commitment Period Reserve' at all times, which consisted of either 90 per cent of their originally assigned AAUs, or five times the emissions of the most recently reviewed emissions inventory, whichever was the lower.¹¹³

Emission reduction credits, in the form of AAUs, ERUs and CERs, gained through use of the flexibility mechanisms, as well as 'removal units' (RMUs) generated by sink activities (see further

¹⁰⁴ Art. 6(1)(b) and (d). ¹⁰⁵ Art. 12(3)(b). ¹⁰⁶ Art. 12(2). ¹⁰⁷ Art. 12(10). ¹⁰⁸ Art. 12(8).

¹⁰⁹ Art. 12(4). ¹¹⁰ Art. 12(5). ¹¹¹ Art. 12(9).

¹¹² Marrakesh Accords, FCCC/KP/CMP/2005/8/Add.2, Decision 15/CMP.1, para. 1.

¹¹³ *Ibid.*, Add.3, Decision 18/CMP.1, Annex, para. 6. The commitment period reserve consisted of holdings of ERUs, CERs, AAUs and/or RMUs for the relevant commitment period, which had not been acquired by an Annex I party.

below), were able to be used to meet the emission reduction commitments of Annex I parties under Article 3(1).¹¹⁴ Transfers and acquisitions of credits take place between national registries under the responsibility of the parties, and each national registry maintains electronic accounts of a party's AAUs, ERUs, CERs and RMUs, as well as accounts for holdings of any legal entities authorised by the party to engage in the acquisition and transfer of credits.¹¹⁵

Eligibility to participate in the flexibility mechanisms was limited to Annex I parties which had ratified the Protocol and complied with the methodological and reporting requirements specified under Articles 5 and 7 of the Protocol.¹¹⁶ Japanese and Russian resistance prevented agreement on a strict link between acceptance of the arrangements for dealing with non-compliance under the Protocol and eligibility to participate in the Protocol's flexibility mechanisms.¹¹⁷

Decisions of the Marrakesh Accords adopted by the Meeting of the Parties established detailed modalities and guidelines for each of the flexibility mechanisms.¹¹⁸ In relation to the CDM, it was affirmed that it was the host party's prerogative to confirm whether a CDM project activity assists it in achieving sustainable development, although Annex I parties were required to 'refrain from using certified emission reductions generated from nuclear facilities' to meet their commitments under Article 3(1).¹¹⁹ Afforestation and reforestation are the only eligible land-use and forestry projects allowed under the CDM,¹²⁰ and for the first commitment period the total additions to a party's assigned amount resulting from such activities were not to exceed 1 per cent of the base year emissions of the party multiplied by five. While the hope was that this provision would facilitate CDM projects in least developed countries in regions such as Africa, only a few such projects received certification. The failure of the CDM to generate significant project activity in the forestry sector in developing countries led to the consideration of new incentives that would provide credits for reductions in deforestation and forest degradation in developing countries (REDD+), discussed further below.

The parties agreed upon the composition and functioning of the Executive Board of the CDM.¹²¹ Two initial tasks for the Executive Board included the development of a simplified procedure for small-scale projects under the CDM, and the accreditation of independent organisations, known as operational entities, which play a central role in the validation of proposed CDM project activities and the verification and certification of the 'additionality' of emission reductions.¹²² The issue of a certification report by a designated operational entity is the basis for

¹¹⁴ *Ibid.*, Add.1, Decision 2/CMP.1, para. 6.

¹¹⁵ *Ibid.*, Add.2, Decision 12/CMP.1, paras. 30–7. The Climate Change Secretariat established a transaction log to verify transactions of credits as they were proposed and to halt any transactions where a discrepancy was detected.

¹¹⁶ *Ibid.*, Add.1, Decision 2/CMP.1, para. 5.

¹¹⁷ Decision 2/CMP.1, para. 5, requires the enforcement branch of the compliance committee to provide oversight of eligibility to participate in the flexibility mechanisms. See also the decisions relating to each of the flexibility mechanisms: Decision 9/CMP.1, Annex, para. 22(b) (joint implementation); Decision 3/CMP.1, Annex, para. 32(b) (CDM); Decision 11/CMP.1, Annex, para. 3(b) (emissions trading).

¹¹⁸ See Decision 9/CMP.1 (joint implementation); Decision 3/CMP.1 (CDM); and Decision 11/CMP.1 (emissions trading).

¹¹⁹ Decision 5/CP.6, 'Implementation of the Buenos Aires Plan of Action', FCCC/CP/2001/L.7, 24 July 2001, Annex VI, para. 11.

¹²⁰ The Subsidiary Body for Scientific and Technical Advice was requested by the Conference of the Parties to develop definitions and modalities for including afforestation and reforestation project activities under the CDM. A decision was adopted on this matter at the ninth Conference of the Parties (Decision 19/CP.9).

¹²¹ *Ibid.*, Annex, paras. 7, 12 and 13.

¹²² *Ibid.*, Annex, paras. 27 and 43. 'Validation' involves the independent evaluation of a project activity by a designated operational entity against the requirements of the CDM set out in Decision 17/CP.7 and other relevant decisions of the

the Executive Board's issuing CERs equal to the verified amount of emission reductions.¹²³ The Accords also provided that public funding for CDM project activities must not result in a diversion in official development assistance and must be separate from and not counted towards the financial obligations of Annex I parties under the Protocol. The parties agreed that 2 per cent of the certified emission reductions issued for CDM project activities would go towards assisting developing country parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.¹²⁴

The Marrakesh Accords' decisions concerning joint implementation under Article 6 were less elaborate than those for the CDM. An Article 6 supervisory committee was established to supervise the verification of ERUs from joint implementation activities,¹²⁵ which followed a two-track procedure. Where a host party met the eligibility requirements for participation in the flexibility mechanisms, it was able itself to certify ERUs generated by activities within its territory as being additional to reductions that would otherwise be made. If the host party did not meet the eligibility requirements, it could still host joint implementation projects; however, any resulting ERUs had to be verified by the Article 6 supervisory committee under a procedure comparable to the CDM procedure.¹²⁶ Projects starting from 2000 were eligible to qualify as joint implementation activities, but the resulting ERUs were only issued for crediting periods starting after 2008.¹²⁷

Sinks

The inclusion of carbon sinks within the Protocol remained controversial up to the final stages of the negotiations. Some countries, particularly the United States and Australia, were strongly in favour of allowing activities that resulted in carbon sequestration (e.g. afforestation, reforestation and land-use changes) to count towards their quantified commitments. The inclusion of carbon sinks was strongly opposed by other countries, particularly the members of the EU. The final text adopted in Article 3(3) allowed for commitments to be met by 'net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990, measured as verifiable changes in carbon stocks in each commitment period'. A last-minute proposal to include additional sinks resulted in the inclusion of Article 3(4), which required the Conference of the Parties serving as the Meeting of the Parties to the Protocol to, at its first session or as soon as practicable thereafter, 'decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in

COP/MOP. A validated project then becomes 'registered' when it is formally accepted by the Executive Board as a CDM project activity. 'Verification' involves periodic independent review and *ex post* determination by the designated operational entity of the monitored reductions in anthropogenic emissions by sources that have occurred as a result of the registered CDM project activity and are 'additional' to any that would have occurred in the absence of the project. 'Additionality' is determined by reference to project-specific baselines and monitoring plans devised according to methodologies specified in the Marrakesh Accords. 'Certification' is the written assurance by the operational entity that the project activity achieved the verified reductions within a specified period of time.

¹²³ *Ibid.*, Annex, para. 64. CERs are issued automatically by the Executive Board unless a party involved in the project activity or at least three members of the Executive Board request a review of the proposed issuance; any review of proposed issues of CERs is limited to matters of fraud, malfeasance or incompetence of the designated operational entity (para. 65).

¹²⁴ Decision 10/CP.7, 'Funding under the Kyoto Protocol'. See also Decision 1/CMP.3 establishing the Adaptation Fund Board as the operating entity of the fund financed by a share of proceeds from the CDM (the Adaptation Fund).

¹²⁵ Decision 9/CMP.1, para. 3; and Annex, paras. 4 and 15. ¹²⁶ Annex, paras. 23 and 24. ¹²⁷ *Ibid.*, para. 5.

greenhouse gas emissions by sources and removals by sinks in the agricultural soils and land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for parties included in Annex I.

At Marrakesh, the parties agreed on a number of new provisions regarding land-use, land-use change and forestry (LULUCF) activities eligible to be credited against the assigned amounts for Annex I parties in accordance with Article 3(4) of the Protocol. These rules were subsequently affirmed in Decision 16/CMP.1 adopted by the first Meeting of the Parties to the Protocol.¹²⁸ Eligible activities included forest management, cropland management, grazing land management and revegetation.¹²⁹ Various governing principles for the inclusion of LULUCF activities were also articulated, namely that:

- the treatment of such activities is to be based on ‘sound science’;
- consistent methodologies are to be used for estimation and reporting of these activities;
- the mere presence of carbon stocks is to be excluded from accounting, as is increased removals due to faster growth caused by increasing concentrations of atmospheric carbon dioxide and indirect nitrogen deposition associated with climate change;
- any reversals of LULUCF removals are to be accounted for at the appropriate time; and
- the implementation of LULUCF activities must contribute to biodiversity conservation and sustainable use of natural resources.¹³⁰

When LULUCF activities under Article 3(3) and (4) resulted in a net removal of greenhouse gases, an Annex I party could issue removal units (RMUs) on the basis of these activities as part of meeting its commitment under Article 3(1). To be available for credit against an Annex I party’s emission reduction commitments, RMUs were required to be verified by the expert review teams established by the Protocol (see below). Use of RMUs to meet emission reduction targets during the first commitment period was also subject to several conditions.¹³¹

Another area where progress was achieved on sinks was with regard to measures for reducing emissions from deforestation and forest degradation in developing countries (REDD+), activities which contribute around 17 per cent of global greenhouse gas emissions.¹³² The Copenhagen Accord, agreed at the Conference of the Parties in 2009, called for incentives to be provided to developing countries to reduce deforestation through the ‘immediate establishment’ of a mechanism including REDD+ to mobilise financial resources from developed countries.¹³³ While not actually establishing such a mechanism,¹³⁴ the Accord noted that a ‘substantial’ part of the mitigation and adaptation finance should be provided to REDD+.¹³⁵ A separate decision of the parties at Copenhagen outlined methodological guidance for REDD+ activities,¹³⁶ and was

¹²⁸ Annex, para. 6. ¹²⁹ *Ibid.* Definitions are in Decision 16/CMP.1, Annex, para. 1.

¹³⁰ Decision 16/CMP.1, para. 1. ¹³¹ *Ibid.*, Annex, paras. 4, 10, 11 and Appendix.

¹³² REDD+ extends beyond deforestation and forest degradation to also recognise the role of conservation, sustainable forest management and the enhancement of forest carbon stocks in reducing emissions.

¹³³ *Ibid.*, para. 6.

¹³⁴ *Ibid.* A detailed proposal from the REDD+ negotiations had been developed prior to Copenhagen, but was never formally adopted, see *Policy Approaches and Positive Incentives on Issues Relating to Reducing Emissions from Deforestation and Forest Degradation in Developing Countries; and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries*, Draft Decision –/CP.15/FCCC/AWGLCA/2009/L.7/Add.6, available at <http://unfccc.int/resource/docs/2009/awglca8/eng/l07a06.pdf>

¹³⁵ Copenhagen Accord, para. 8.

¹³⁶ Decision 4/CP.15, Report of the Conference of the Parties on Its 15th Session, Copenhagen, 7–19 December 2009, FCCC/CP/2009/11/Add.1 (30 March 2010).

supplemented by a series of decisions known as the Warsaw Framework for REDD+ adopted in 2013.¹³⁷ These decisions built on previous endorsements for REDD+ activities made in the 2007 Bali Action Plan. The UN-REDD Programme, launched in 2008, currently provides financial support to nationally led REDD+ activities in sixty-four developing countries.¹³⁸ These activities form part of broader efforts undertaken by countries with the support of multilateral or bilateral initiatives to enhance their 'REDD+ readiness'; that is, to build their capacity in order to be ready for the introduction of a REDD+ mechanism.¹³⁹ The World Bank Forest Carbon Partnership Facility also provides funding to assist developing countries to be eligible for involvement in a future incentive system under REDD+.¹⁴⁰

The role for REDD+ under the Paris Agreement, as well as the fate of the Protocol's detailed LULUCF rules, remains uncertain. However, the Agreement does reference parties' obligation to 'take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases', as well as forest conservation efforts, opening the door for a continuing role for LULUCF methodologies and REDD+ activities in the post-2020 period.¹⁴¹

Developing Countries

Article 10 of the Kyoto Protocol dealt with that part of the 'Berlin Mandate' that called for the advancement of the implementation of commitments by all parties, including developing country parties. The Preamble to Article 10 affirmed that the provision did not 'introduc[e] any new commitments for Parties not included in Annex I' but merely reaffirmed existing commitments under Article 4(1) of the Convention while 'continuing to advance the implementation of these commitments in order to achieve sustainable development'. A number of measures were listed in Article 10 which cover areas such as the formulation of 'cost-effective national, and where appropriate regional, programmes to improve the quality of local emission factors, activity data and/or models which reflect the socioeconomic conditions of each Party for the preparation and periodic updating of national inventories' of emissions of greenhouse gases and the formulation, implementation, publication and updating of 'national and, where appropriate, regional programmes containing measures to mitigate climate change and measures to facilitate adequate adaptation to climate change'. Other measures included the provision of information on programmes that contain measures addressing climate change and its adverse impacts, and the promotion of effective modalities relating to the transfer of environmentally sound technologies pertinent to climate change.

Reporting and Compliance

Detailed reporting obligations for Annex I parties were established by Articles 5, 7 and 8 of the Protocol. These built upon the reporting and review procedures developed under the Convention, particularly the in-depth review process, and are likely to be a model drawn on in developing similar rules under the Paris Agreement. Article 5(1) provided that each Annex I party was

¹³⁷ Decisions 9/CP.19 –15/CP.19, Report of the Conference of the Parties on Its 19th Session, Warsaw, 11–22 November 2013, FCCC/CP/2013/10/Add.1.

¹³⁸ See www.un-redd.org

¹³⁹ For an overview of REDD+ readiness and demonstration activities, see G. A. Cerbu, B. M. Swallow and D. Y. Thompson, 'Locating REDD: A Global Survey and Analysis of REDD Readiness and Demonstration Activities', 14 *Environmental Science and Policy* 168 (2011).

¹⁴⁰ Available at: www.forestcarbonpartnership.org

¹⁴¹ Paris Agreement, Art. 5.

required to have in place, by no later than 2007, a national system for the estimation of anthropogenic emissions by sources and removals by sinks of greenhouse gases. Guidelines for such national systems were decided upon by the Conference of the Parties serving as the Meeting of the Parties to the Protocol at its first session. Under Article 7(1), each Annex I party was required to incorporate in its annual inventory of anthropogenic emissions by sources and removals by sinks, 'the necessary supplementary information for the purposes of ensuring compliance with Article 3'. Annex I parties were also required to include supplementary information to demonstrate compliance with commitments under the Protocol.¹⁴²

The information submitted under Article 7 by Annex I parties is reviewed by 'expert review teams' in accordance with guidelines adopted by the Meeting of the Parties at its first session.¹⁴³ The review process is to provide 'a thorough and comprehensive technical assessment of all aspects of the implementation by a Party' of the Protocol.¹⁴⁴ The expert review teams report to the Meeting of the Parties on the implementation of commitments by the party, identifying any potential problems in, and factors influencing, the fulfilment of commitments.¹⁴⁵ The reports of the expert review teams are circulated to all parties to the Convention, and the Conference of the Parties considers the information submitted under Article 7 and the expert review reports and 'take[s] decisions on any matter required for the implementation of [the] Protocol'.¹⁴⁶

Apart from the review of information submitted by parties, the Protocol contemplated a further mechanism for ensuring compliance with commitments under the Protocol. Article 18 provided that the Meeting of the Parties, at its first session, should 'approve appropriate and effective procedures and mechanisms to determine and to address cases of non-compliance with the provisions of this Protocol, including through the development of an indicative list of consequences, taking into account the cause, type, degree and frequency of non-compliance'. Decisions reached as part of the Marrakesh Accords, and subsequently adopted by the first Meeting of the Parties to the Protocol, elaborated a sophisticated and detailed non-compliance mechanism consisting of Facilitative and Enforcement Branches.¹⁴⁷ This mechanism has been fully operational since 2006 and has been described as constituting 'a landmark in international climate policy and global environmental governance more broadly'.¹⁴⁸ Nevertheless, it has not been replicated in the Paris Agreement, which opted instead for a soft 'facilitative' compliance mechanism.¹⁴⁹

Negotiations for a New Climate Treaty Agreement

Under the Kyoto Protocol, commitments for subsequent periods were to be established by amendments to Annex B adopted in accordance with the provisions of Article 21(7).¹⁵⁰ The Meeting of the Parties to the Protocol was required to initiate reconsideration of the commitments in Annex B by 2005.¹⁵¹ Discussions were conducted in two negotiating tracks: one

¹⁴² Art. 7(2). ¹⁴³ Art. 8(1). ¹⁴⁴ Art. 8(3). ¹⁴⁵ *Ibid.* ¹⁴⁶ Art. 8(5) and (6).

¹⁴⁷ Decision 27/CPM.1. See also Rules of Procedure CMP.2 and CMP.4. For details, see Chapter 5.

¹⁴⁸ S. Oberthür and R. Lefeber, 'Holding Countries to Account: The Kyoto Protocol's Compliance System Revisited After Four Years of Experience', 1 *Climate Law* 133 (2010).

¹⁴⁹ Paris Agreement, Art. 15.

¹⁵⁰ Amendments to the Protocol can be adopted by a three-quarters majority vote of the parties present and voting at the meeting at which it is proposed for adoption, followed by its ratification or acceptance by at least three-fourths of the parties to the Protocol.

¹⁵¹ Art. 3(9).

designed to negotiate amendments to the Protocol, including work on a second commitment period (Kyoto track), and the other aiming to negotiate long-term cooperative action under the Convention (Convention track).

At the Durban Conference of the Parties in 2011, an in-principle agreement was reached on a second commitment period, running from 2013 to 2017 or 2020. This Agreement was formalised at COP18, in Doha, Qatar with the adoption of the 'Doha Amendment to the Kyoto Protocol' (Doha Amendment). The Doha Amendment included new emissions reduction obligations for Annex I Parties to the Kyoto Protocol in a second commitment period from 1 January 2013 to 31 December 2020. It also stated that Parties in Annex B should strive to achieve overall emissions reductions of least 18 per cent below 1990 levels in the eight-year period from 2013 to 2020. However, as the Doha Amendment has not yet come into force, no second commitment period is presently in effect. The Amendment will enter into force on the ninetieth day after three-quarters of the Parties to the Kyoto Protocol have deposited their instruments of acceptance with the Depository.¹⁵²

The Durban Conference of the Parties was also important for the Convention track discussions, representing the start of a new phase in international climate negotiations. Agreement was reached to establish a new platform, known as the 'Durban Platform for Enhanced Action'. The platform provided for negotiations under the 1992 Climate Change Convention 'to deliver a new and universal greenhouse gas reduction protocol, legal instrument or other outcome with legal force by 2015 for the period beyond 2020'.¹⁵³ This wording reflected a compromise between parties' different negotiating positions: a broad coalition of developing and developed countries – including the EU, the Umbrella Group countries, small island states and least developed countries – pushed for a mandate to negotiate a new legal agreement to supplement or replace the Kyoto Protocol whereas, on the other side, India, in particular, insisted that the Durban Platform leave open the possibility of any new arrangements being adopted in a decision of the Conference of the Parties. An Ad Hoc Working Group (ADP) was launched as a subsidiary body to drive forward this work,¹⁵⁴ and negotiations were directed to include 'the areas of mitigation, adaptation, finance, technology development and transfer, transparency of action and support, and capacity-building'.¹⁵⁵ In the same decision, the Conference of the Parties launched a work plan on 'enhancing mitigation ambition to identify and to explore

¹⁵² Based on the current number of Parties to the Kyoto Protocol (192), the Amendment will enter into force on the ninetieth day after the Depository receives 144 instruments of acceptance. As of 29 December 2016, seventy-five countries have ratified the Doha Amendment.

¹⁵³ Decision 1/CP.17, Report of the Conference of the Parties on its 17th Session, Durban, 28 November–9 December 2011, FCCC/CP/2011/9/Add.1 ('Establishment of Durban Platform'). Following the Durban COP, the interpretation of 'protocol, legal instrument or other outcome with legal force by 2015' was discussed extensively by legal commentators, see for example, S. Maljean-Dubois, T. Spencer and M. Wemeare, 'The Legal Form of the Paris Climate Agreement; A Comprehensive Assessment of Options', 1 *Carbon and Climate Law Review* 1 (2015); R. Byrnes, and P. Lawrence, 'Can "Soft Law" Solve Hard Problems? Justice, Legal Form and the Durban-Mandated Climate Negotiations', 34(1) *University of Tasmania Law Review* 34 (2015); A. Celliers, 'The Scope of a 2015 Climate Change Agreement: A Mixed Top-Down/Bottom-Up Approach to Achieve Universal Participation', 32(1) *Environmental and Planning Law Journal* 46 (2015); E. Worthrop and D. Waskow, 'What's in a Name? Paris Agreement's Legal Form Explained in 7 Questions', *World Resources Institute*, December 2015, at www.wri.org/blog/2015/12/what%E2%80%99s-name-paris-agreements-legal-form-explained-7-questions

¹⁵⁴ In establishing the ADP, the parties agreed to terminate the prior Ad Hoc Working Group on Long-term Cooperative Action, which had been established as a broad negotiating platform under the Climate Change Convention in order to implement the Bali Action Plan (pursuant to decision 1/CP.13).

¹⁵⁵ Decision 1/CP.17, para. 5, Establishment of Durban Platform.

options for a range of actions that can close the ambition gap with a view to ensuring the highest possible mitigation efforts by all Parties'.¹⁵⁶

Between COP18 in Doha in 2012 and COP21 in Paris in 2015, further negotiations fleshed out the elements and text of a new agreement. Importantly, at COP19 in Warsaw, Poland in December 2013, all parties were invited to prepare 'intended nationally determined contributions' (INDCs) towards achieving the objective of the Convention. At COP20, in 2014, in the 'Lima Call for Climate Action', the Conference of the Parties gave further guidance on the information requirements for the INDCs. To facilitate clarity, transparency and understanding, the types of information to be communicated in the INDCs was specified, including: quantifiable information on the reference point; time frames and/or periods for implementation; scope and coverage; planning processes, assumptions and methodological approaches including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals.¹⁵⁷ Parties could also clarify how they considered their INDCs to be fair and ambitious, in light of their national circumstances, and how they contributed towards achieving the objective as set out in Article 2 of the Convention.¹⁵⁸ Prior to the Paris Conference of the Parties, more than 180 countries, responsible for more than 90 per cent of global emissions submitted their interim INDCs.¹⁵⁹

In the lead-up to COP21 in Paris, the French Government, as President of the Conference of the Parties, worked to engage a wide range of government and non-government stakeholders in order to build momentum ahead of the meeting. Other governments also made major bilateral announcements that spurred the negotiations, such as the United States–China Joint Presidential Statement on Climate Change¹⁶⁰ and the United Kingdom–China Joint Climate Change Statement.¹⁶¹

PARIS AGREEMENT

Concluding years of contentious negotiations, the Paris Agreement was adopted by COP21 on 12 December 2015, as an annex to a decision of the Conference of the Parties. This decision contains more detailed guidance on many aspects covered only briefly in the Agreement (such as arrangements for the pre-2020 period, climate finance and capacity-building) and sets forward a series of decisions to give effect to the Agreement.¹⁶² The Agreement was rapidly ratified by Convention parties, and entered into force on 4 November 2016. As of March 2017, 133 of the

¹⁵⁶ *Ibid.*, para. 7.

¹⁵⁷ Report of the Conference of the Parties on its 20th session, Lima, 1–14 December 2014, FCCC/CP/2014/10/Add.1, decision 1/CP.20, para. 14.

¹⁵⁸ *Ibid.* These INDCs formed the basis of Nationally Determined Contributions (NDCs) under the Paris Agreement as a country's first INDC became its first NDC when it ratified the Paris Agreement, unless it decided to submit a new NDC at that time.

¹⁵⁹ See Center for Climate and Energy Solutions, *Outcomes of the UN Climate Change Conference in Paris*, December 2015, www.c2es.org/international/negotiations/cop21-paris/summary

¹⁶⁰ See White House, Office of the Press Secretary, US–China Joint Presidential Statement on Climate Change, 25 September 2015, at <https://obamawhitehouse.archives.gov/the-press-office/2015/09/25/us-china-joint-presidential-statement-climate-change>

¹⁶¹ See UK–China joint statement on climate change released during the visit of Chinese Premier Li Keqiang to the UK on the 17 June 2014 at www.gov.uk/government/publications/uk-china-joint-climate-change-statement

¹⁶² Decision 1/CP.21, Report of the Parties on its 21st session, Paris, 30 November–11 December 2015, FCCC/CP/2015/10/Add.1 ('Adoption of the Paris Agreement').

197 parties to the Convention are party to the Paris Agreement. The first Meeting of the Parties to the Paris Agreement took place in Marrakesh, Morocco in November 2016.¹⁶³

Questions over the legal form of the Agreement remained contentious over the course of the Paris negotiations. Despite some commentators questioning whether the Paris Agreement has any legal effect under international law,¹⁶⁴ there is now broad acceptance that the Paris Agreement is a treaty within the definition of the VCLT.¹⁶⁵ The Paris Agreement contains treaty-like clauses that include provisions on how states express their consent to be bound (through ratification, accession, acceptance or approval), the minimum requirements for entry into force, reservations, withdrawal and the depositary. However, like the 1992 Convention, many of its provisions use ambiguous or permissive language that create only soft obligations,¹⁶⁶ to accommodate the interests of particular parties, such as the United States, allowing for participation by executive action.

Preamble and Objectives

The preamble to the Paris Agreement recognises a wide range of climate-change-related matters, a number of which did not achieve sufficient agreement to be included in the operative provisions of the treaty, including the relationship between climate change and human rights:

Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity.

Inclusion of a human rights perspective was heavily lobbied for by human rights advocates, and although this language did not appear in the objective of the Paris Agreement as originally hoped, it marks the first time that human rights references have been included in a climate change treaty.¹⁶⁷

¹⁶³ Paris Agreement, Art. 16 provides: 'The Conference of the Parties, the supreme body of the Convention, shall serve as the meeting of the Parties to this Agreement.'

¹⁶⁴ See for example, A. M. Slaughter, 'The Paris Agreement to Global Governance', Project Syndicate (28 December 2015), at www.project-syndicate.org/commentary/paris-agreement-model-for-global-governance-by-anne-marie-slaughter-2015-12 and R. Falk, 'Voluntary International Law and the Paris Agreement' (16 January 2016) at <https://richardfalk.wordpress.com/2016/01/16/voluntary-international-law-and-the-paris-agreement>

¹⁶⁵ Vienna Convention on the Law of Treaties (Vienna, 23 May 1969; in force 27 January 1980). See D. Bodansky, 'The Legal Character of the Paris Agreement', 25(2) *Review of European Comparative & International Environmental Law* (2016), 142.

¹⁶⁶ For a detailed examination of the legal nature of key provisions in the Agreement, see Bodansky, 'Legal Character of the Paris Agreement', 142.

¹⁶⁷ J. Knox, United Nations Mandate on Human Rights and the Environment, 12 December 2015, available at <http://srenvironment.org/2015/12/12/paris-agreement>. See further, J. Knox, 'Linking Human Rights and the Environment at the United Nations', 33(2) *Harvard Environmental Law* 477 (2009); B. Mayer, 'Human Rights in the Paris Agreement' 6(1-2) *Climate Law* 109 (2016); UNEP and Sabin Center for Climate Change Law, *Climate Change and Human Rights* (2015), at <http://columbiaclimatelaw.com/files/2016/06/Burger-and-Wentz-2015-12-Climate-Change-and-Human-Rights.pdf>

Other novel concepts mentioned in the preamble include:

- the intrinsic relationship that climate change actions, responses and impacts have with equitable access to sustainable development and eradication of poverty;
- the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change;
- the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities;
- the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity, recognised by some cultures as Mother Earth;
- the importance for some of the concept of ‘climate justice’, when taking action to address climate change;
- the importance of the engagements of all levels of government and various actors, in accordance with respective national legislations of Parties, in addressing climate change; and
- that sustainable lifestyles and sustainable patterns of consumption and production, with developed country Parties taking the lead, play an important role in addressing climate change.

Article 2 articulates the objective and goals of the Paris Agreement, which are designed to enhance the implementation of the 1992 Climate Change Convention, including its objective of preventing dangerous anthropogenic interference with the climate system.¹⁶⁸ The aims of the Agreement, set out in Article 2.1 are:

to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

- (a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
- (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;
- (c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Article 2.1(a) – also known as the Agreement’s ‘long-term temperature goal’ – represents the first time that states have agreed in a global treaty on a limit to global temperature increase. The commitment to aim for ‘well below’ a 2 °C rise and ‘to pursue efforts to limit the temperature increase to 1.5 °C’ was regarded as a victory for the High Ambition Coalition formed during the Paris negotiations, which included the small island states, African developing countries, the EU, Mexico, Canada, Brazil and the United States.¹⁶⁹ Other provisions of Article 2.1 have attracted

¹⁶⁸ A minimal list of definitions for the Agreement is set out in Article 1. The greenhouse gases covered by the Paris Agreement are the same as those covered by the Convention.

¹⁶⁹ See for example, M. Wilder, ‘Well Below 2C’, 20 *Law Society of New South Wales Journal* 34 (2016); D. Bodansky, ‘Paris Climate Change Agreement: A New Hope’, 110(2) *American Journal of International Law* 288 (2016); M. J. Mace, ‘Mitigation Commitments under the Paris Agreement and the Way Forward’, 6(1–2) *Climate Law* 21 (2016); C. Streck et al., ‘Paris Agreement – A New Beginning’ 13(1) *Journal for European Environmental and Planning Law* 3 (2016).

less commentary, but reflect equally critical commitments to adaptation, resilient, low carbon development pathways, and appropriate levels of financing for such development.

Article 2.1(a) is to be read in conjunction with Article 4.1, which provides an indicative timetable for peaking and decline of greenhouse gases in order to meet the long-term temperature goal of the Agreement. It states:

In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.

Article 4.1 has two components. Under the first, parties aim to reach 'global peaking' (i.e. maximal emissions output) as soon as possible, with a longer timetable contemplated for developing country parties. As commentators have noted, the second half of Article 4.1, seeking 'a balance between anthropogenic emissions by sources and removals by sinks', requires net zero emissions after 2050; a goal that will not be achievable without a complete phase out of fossil fuels.¹⁷⁰ No specific mention is made of a commitment to cease fossil fuel use, or phase out fossil fuel subsidies. Some climate scientists have also pointed out that to prevent dangerous warming levels, emissions will need to be reduced below net zero, i.e. to negative emissions levels through increasing the capacity for carbon sequestration.¹⁷¹ Net zero emissions is to be achieved 'on the basis of equity'.

The principle of common but differentiated responsibilities is specifically mentioned in Article 2.2, which provides that the Paris Agreement 'will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'. The addition of the phrase, 'in the light of different national circumstances' appears designed to provide for a more flexible approach than the 'firewall' between developed and developing country obligations that characterised the Kyoto Protocol.¹⁷²

Nationally Determined Contributions

Nationally determined contributions (NDCs) are the main technique used to meet the Agreement's objectives. Unlike quantified emission reduction limitations of the Kyoto Protocol specified in Annex B of that treaty, NDCs are arrived at through a nationally led, bottom-up process undertaken by each party. In the Paris Agreement, *all parties* (in contrast to only developed country parties under the Kyoto Protocol) are required to submit their nationally determined contributions to the global response to climate change 'with a view to achieving the purpose of

¹⁷⁰ M. Gerrard, 'Legal Implications of the Paris Agreement for Fossil Fuels', 19 December 2015, Climate Law Blog, Sabin Center for Climate Change Law, at <http://blogs.law.columbia.edu/climatechange/2015/12/19/legal-implications-of-the-paris-agreement-for-fossil-fuels>

¹⁷¹ M. Meinhausen et al., 'Greenhouse-Gas Emission Targets for Limiting Global Warming to 2 °C', 458 *Nature* 1158 (2009).

¹⁷² C. Voigt and F. Ferreira, 'Differentiation in the Paris Agreement' 5(1–2) *Climate Law* 58 (2016).

[the] Agreement as set out in Article 2'.¹⁷³ Such efforts are to be 'ambitious' and must 'represent a progression over time', while recognising the need to support the implementation efforts of developing country parties. This suggests a shift from the approach of the Kyoto Protocol and, arguably, a new understanding of the meaning of the common but differentiated responsibilities principle.¹⁷⁴

Article 4.2 states that each party is required to 'prepare, communicate and maintain successive NDCs that it intends to achieve'.¹⁷⁵ While a party may adjust its existing NDC at any time 'with a view to enhancing its level of ambition', parties must communicate a new NDC every five years, and each NDC should be informed by the outcomes of the global stocktake process (described further below).¹⁷⁶ In addition, Article 4.3 requires each party's successive NDC to 'represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'.

The content of NDCs is largely left to the discretion of each party, to cover proposed actions in relation to climate change mitigation and adaptation,¹⁷⁷ with information to be provided to assist on 'clarity, transparency and understanding'.¹⁷⁸ In preparing NDCs, parties shall promote 'environmental integrity, transparency, accuracy, completeness, comparability and consistency, and ensure the avoidance of double counting',¹⁷⁹ in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to the Agreement. NDCs will be kept in a public registry maintained by the Convention secretariat.¹⁸⁰

Mitigation Commitments

Unlike the Kyoto Protocol, the Paris Agreement establishes no specific targets for emissions reductions by parties. Instead, the key obligation of all parties (as described above) is to 'prepare, communicate and maintain' successive NDCs. Parties are required to 'pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions'.¹⁸¹ It is intended that each party's NDC should reflect increasing mitigation ambition (e.g. more stringent emissions reduction targets over time), to achieve the goal set out in Article 2. In a nod to the potential trade consequences of strict domestic mitigation measures where associated with tariffs on carbon-intensive foreign-produced goods, parties 'shall take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts' of such 'response measures', particularly developing country parties.¹⁸²

¹⁷³ Paris Agreement, Art. 3.

¹⁷⁴ J. Peel, 'Foreword to the TEL Fifth Anniversary Issue Re-evaluating the Principle of Common But Differentiated Responsibilities in Transnational Climate Change Law', 5(2) *Transnational Environmental L.* 245, (2016).

¹⁷⁵ Paris Agreement, Art. 4(2). ¹⁷⁶ Art. 4.9.

¹⁷⁷ Arts. 4(2) and 7(11). Article 4.7 also recognises mitigation-adaptation linkages specifying that: 'Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans can contribute to mitigation outcomes under this Article.'

¹⁷⁸ Art. 4(13). Decision 1/CP.21 sets out the information that parties are to include in their NDCs.

¹⁷⁹ Paris Agreement, Art. 4(13).

¹⁸⁰ Paris Agreement, Art. 4(12). NDCs can be found on the UNFCCC interim NDC registry at: www4.unfccc.int/ndcregistry/Pages/Home.aspx

¹⁸¹ *Ibid.* ¹⁸² Art. 4(15). See further, Chapter 18, pp. 843ff.

While all parties are required to submit NDCs, a distinction is drawn in the Paris Agreement between the commitments of developed, developing and least developed parties. Article 4.4 provides that ‘developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets’.¹⁸³ Developing country parties are directed that they ‘should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in light of different national circumstances’. The least developed countries and small island developing states ‘may prepare and communicate strategies, plans and actions for low greenhouse gas emissions development reflecting their special circumstances’.¹⁸⁴ This approach blurs country categories to take into account diverse national circumstances, capabilities and vulnerabilities, which change over time.¹⁸⁵ Article 4.5 of the Agreement recognises that ‘enhanced support for developing country Parties will allow for higher ambition in their actions’ but imposes only a soft, non-specific obligation for ‘support’ to be provided to developing country parties for the implementation of mitigation commitments under Article 4. In accordance with the focus of the Agreement on achieving a fundamental shift away from emissions intensive development, Article 4.19 requires that ‘all Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies’.¹⁸⁶

Parties, including regional economic organisations and their members, can agree to act jointly in implementing mitigation commitments and must notify the secretariat of the terms of that agreement when they communicate their NDCs, including the emission level allocated to each party within the relevant time period.¹⁸⁷ Each party to a joint implementation agreement, including parties acting jointly in the framework of a regional economic integration organisation (such as the EU), remains responsible for its emission level set out in the agreement.¹⁸⁸

Sinks

In contrast to the detailed rules of the Kyoto Protocol and Marrakesh Accords on LULUCF activities, the provisions of the Paris Agreement regarding carbon sinks and forests are limited. The preamble of the Agreement recognises ‘the importance of the conservation and enhancement, as appropriate, of sinks and reservoirs of the greenhouse gases’, and Article 5.1 provides ‘Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d), of the Convention, including forests.’ In terms of recognising and implementing mitigation actions with respect to removals of carbon via sinks in NDCs, Article 4.14 provides that parties should take into account, as appropriate, existing methods and guidance under the Convention.

The Paris Agreement incorporates into a formal climate treaty instrument the concept of REDD+, which had previously existed outside the regime in COP decisions. However, the Agreement did not

¹⁸³ Art. 4(4). ¹⁸⁴ Paris Agreement, Art. 4(6).

¹⁸⁵ For commentary on the distinction between developed and developing country Parties in the Paris Agreement, see Voigt and Ferreira, ‘Differentiation in the Paris Agreement’; and S. Maljean-Dubois, ‘The Paris Agreement: A New Step in the Gradual Evolution of Differential Treatment in the Climate Regime?’, 25(2) *Review of Comparative, European and International Environmental Law* 161 (2016).

¹⁸⁶ A list of parties who have submitted their long-term plans in accordance with this paragraph is contained at: http://unfccc.int/focus/long-term_strategies/items/9971.php

¹⁸⁷ Art. 4(16). ¹⁸⁸ Art. 4(17) and 4(18).

establish any new mechanism or framework on REDD+, merely endorsing the existing Warsaw Framework for REDD+, and other relevant decisions of the Conference of the Parties.¹⁸⁹

Article 5.2 encourages parties 'to take action to implement and support, including through results-based payments', REDD+ activities and 'alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches'.¹⁹⁰

Voluntary Cooperation and Carbon Markets

While the Paris Agreement makes no mention of 'carbon markets', it allows parties to pursue 'voluntary cooperation' in the implementation of their NDCs and to use 'international transferred mitigation outcomes' to help meet emissions reduction targets.¹⁹¹ Such 'voluntary cooperation' is intended 'to allow for higher ambition' in parties' mitigation and adaptation actions and 'to promote sustainable development and environmental integrity'.¹⁹² Article 6.2 further provides that where parties engage on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes (i.e. carbon credits) towards NDCs, they 'shall . . . promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement'.¹⁹³

Article 6.4 of the Agreement establishes a new mechanism to 'contribute to the mitigation of greenhouse gas emissions and support sustainable development'. The voluntary mechanism allows for the participation of public and private sectors, and aims to deliver an overall reduction in global emissions (this is in contrast to the market mechanisms established under the Kyoto Protocol, which did not result in an overall reduction of emissions).

The new mechanism will operate under the 'authority and guidance' of a body to be designated by the Conference of the Parties serving as the Meeting of the Parties to the Agreement, and the

¹⁸⁹ See Decision 1/CP.16, Report of the Conference of the Parties on Its 16th Session, Cancun, 29 November–10 December 2010, FCCC/CP/2010/7/Add.1 ('Cancun Convention Agreement'), paras. 68–79, which provide for a framework for parties undertaking actions relating to reducing emissions from deforestation and forest degradation, conservation of forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks. This decision also launched a process for further work to be undertaken by the SBSTA and the AWG-LCA. COP 19, held in November 2013 in Warsaw, Poland, adopted the seven decisions of the Warsaw Framework for REDD+ (Report of the Conference of the Parties on Its 19th Session, Warsaw, 11–22 November 2013, FCCC/CP/2013/10/Add.1, decisions 9–13 inclusive). This Agreement built on the previous work of the COP and was widely recognized as a breakthrough in negotiations for providing clarity on a number of important issues related to REDD+ implementation. For a full list and text of UN decisions relating to REDD+, including the decisions comprising the Warsaw Framework, see Decision Booklet REDD+, at http://unfccc.int/land_use_and_climate_change/lulucf/items/6917.php

¹⁹⁰ For further literature on co-benefits (or not) of REDD+ for communities in which such activities take place, see S. Chapman et al., 'Defining the Legal Elements of Benefit Sharing in Context of REDD+', 8(14) *Carbon and Climate Law Review* 270 (2014); B. Horner, 'A Human Rights-Based Approach to Climate Change Lessons Learnt from CDM and REDD+', 19 *New Zealand Journal of Environmental Law* 79 (2015); I. J. Visseren-Hamakers et al., 'Trade-offs, Co-benefits and Safeguards: Current Debates on the Breadth of REDD+', 4(6) *Current Opinion in Environmental Sustainability* 646 (2012); A. Chatre et al., 'Social Safeguards and Co-benefits in REDD+: A Review of the Adjacent Possible', 4(6) *Current Opinion in Environmental Sustainability* 654 (2012); P. J. Kanowski, 'Implementing REDD+: Lessons from Analysis of Forest Governance', 14(2) *Environmental Science & Policy* 111 (2011).

¹⁹¹ Paris Agreement, Arts. 6.1 and 6.2. ¹⁹² Article 6.1.

¹⁹³ See also Art. 6.5, which specifically prohibits double counting of emissions reductions.

rules, modalities and procedures governing its operation will be developed, with the view to being adopted at the first meeting of the parties, after the Agreement's entry into force.¹⁹⁴ A share of the proceeds from activities under the new mechanism must be used to cover administrative expenses as well as to assist developing country parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.¹⁹⁵ This new mechanism to support carbon markets came as a surprise to many commentators.¹⁹⁶ To balance the inclusion of market-based approaches, Article 6.8 also recognises the importance of non-market approaches to be available to parties to assist in the implementation of their NDCs.¹⁹⁷

Adaptation and Loss and Damage

A priority for many developing countries at the Paris COP21 was to strengthen adaptation efforts under the Climate Change Convention. Significantly, unlike in the Kyoto Protocol, the Paris Agreement elevates the importance of the need to adapt to climate change and places adaptation on an equal footing with mitigation.¹⁹⁸ It does this in two main ways.

First, the Paris Agreement establishes 'the global goal on adaptation' to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the Agreement's long-term temperature goal.¹⁹⁹ The problem is fundamental: the long-term temperature goal, which defined discussions on the mitigation of greenhouse gas emissions, can only be considered acceptable if societies can adapt to the inevitable impacts of this warming that will occur even with a 2 °C temperature rise.²⁰⁰ The parties also record their recognition 'that the current need for adaptation is significant and that greater levels of mitigation can reduce the need for additional adaptation efforts, and that great adaptation needs can involve greater adaptation costs'.²⁰¹

Second, the Agreement requires parties, as appropriate, to engage in adaptation planning processes and the implementation of actions, by a range of mechanisms.²⁰² Parties should also, as appropriate, submit and update periodically an adaptation communication, which may include its priorities, implementation and support needs, plans and actions.²⁰³ Adaptation communications will be recorded in a public registry to be maintained by the secretariat.²⁰⁴

The Paris Agreement emphasises that while adaptation should follow a 'country-driven, gender-responsive, participatory and fully transparent approach',²⁰⁵ at the same time parties should strengthen international cooperative efforts on enhancing adaptation action.²⁰⁶ In such efforts, the needs of developing countries should be taken into account, especially those that are

¹⁹⁴ Paris Agreement, Article 6(7). ¹⁹⁵ Paris Agreement, Art. 6(6).

¹⁹⁶ See for example, Wilder, 'Well below 2C'; C. Streck et al., 'Paris Agreement – A New Beginning', 13(1) *Journal for European Environmental and Planning Law* 3 (2016); K. Lake, 'How Will Carbon Markets Help the Paris Climate Agreement?', *The Conversation*, 13 December 2015, at <https://theconversation.com/how-will-carbon-markets-help-the-paris-climate-agreement-52211>

¹⁹⁷ Art. 8.9 defines a 'framework' to promote non-market approaches.

¹⁹⁸ Recognition of the need to adapt is integrated throughout the Paris Agreement in provisions beyond the main adaptation article, Art. 7. See, for example, Paris Agreement, Arts. 4, 5, 6, 9, 10, 11, 12, 14.

¹⁹⁹ Art. 7(1). ²⁰⁰ Art. 7.2.

²⁰¹ Art. 7.4. See *UNEP Adaptation Gap Report 2016* (2016), at: <http://web.unep.org/adaptationgapreport/sites/unep.org/adaptationgapreport/files/documents/agr2016.pdf>

²⁰² Art. 7.9. ²⁰³ Art. 7.10 ²⁰⁴ Art. 7.12. ²⁰⁵ Art. 7.5.

²⁰⁶ Arts. 7.6 and 7.7. Art. 7.8 directs the UN specialised organisations and agencies to assist with these efforts.

particularly vulnerable to the adverse effects of climate change.²⁰⁷ The Agreement also highlights the need for national adaptation plans to take into account vulnerable groups, communities and ecosystems, with a view to 'integrating adaptation into relevant socioeconomic and environmental policies and actions'.²⁰⁸ By contrast, the Agreement's provisions regarding funding support for adaptation are minimal: Article 7.13 merely refers to the provision of 'continuous and enhanced international support to developing country parties' to assist with their implementation of obligations under the Article.

Whereas adaptation concerns measures taken to ameliorate or respond to climate change impacts, 'loss and damage' refers to harms that cannot be prevented through climate change mitigation or managed through adaptation. Loss and damage has gained increasing importance in recent years,²⁰⁹ a concept that connotes 'the actual and/or potential manifestation of impacts associated with climate change in developing countries that negatively affect human and natural systems', including impacts from extreme events (for example heatwaves, flooding and drought) and slow-onset events (for example, sea-level rise and glacial retreat).²¹⁰ Developing countries, particularly the small island developing states, have long pushed for formal recognition of loss and damage in the climate negotiations.²¹¹ Some developed country parties, particularly the United States and Australia, have resisted recognition of the concept, due to its potential implications of compensation and liability.

In a significant step, the Paris Agreement recognises loss and damage for the first time in a climate change treaty in a separate article to adaptation. Article 8.1 of the Agreement states that 'Parties recognise the importance of averting, minimising and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage'.

The Agreement confirms that the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts, established at COP 19 in Warsaw,²¹² will continue and be subject to the authority and guidance of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement.²¹³ In exercising its numerous functions, the Warsaw International Mechanism has a number of specified objectives.²¹⁴

It appears that loss and damage under the Paris Agreement extends beyond the Warsaw International Mechanism as the Agreement provides 'Parties should enhance understanding,

²⁰⁷ Art. 7.6. ²⁰⁸ Art. 7.5.

²⁰⁹ After intense pressure from developing countries on the issue, the Cancun Convention Agreement in 2010 initiated a work programme to explore approaches to addressing 'loss and damage' caused by climate change (paras. 25–9). For commentary on loss and damage in the UN climate negotiations, see I. Fry, 'The Paris Agreement – An Insider's Perspective – the Role of the Small Island Developing States', 46(2) *Environmental Policy & Law* 105 (2016); M. Burkett, 'Reading between the Red Lines: Loss and Damage and the Paris Outcome', 6(1) *Climate Law* 118 (2016); M. J. Mace and R. Verheyen, 'Loss, Damage and Responsibility after COP 21: All Options Open for the Paris Agreement', 25(2) *Review of European Comparative & International Environmental Law* 197 (2016).

²¹⁰ See Subsidiary Body for Implementation 37th Session Doha, 26 November to 1 December 2012, FCCC/SBI/2012/INF.14, *A literature review on the topics in the context of thematic area 2 of the work programme on loss and damage: a range of approaches to address loss and damage associated with the adverse effects of climate change*.

²¹¹ See for example, Fry, 'Paris Agreement – An Insider's Perspective', 105; M. Burkett, 'Loss and Damage', 4(1–2) *Climate Law* (2014) 119.

²¹² Report of the Conference of the Parties on its 19th Session, held in Warsaw from 11 to 23 November 2013, FCCC/CP/2013/10/Add.1, Decision 2/CP.19.

²¹³ Art. 8.2. ²¹⁴ Art. 8.7.

action and support, *including* through the Warsaw International Mechanism, as appropriate, on a cooperative and facilitative basis with respect to loss and damage associated with the adverse effects of climate change'.²¹⁵ Moreover, there seems to be scope for the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement to enhance and strengthen the Warsaw International Mechanism over time.²¹⁶ Significantly, however, the decision adopting the Paris Agreement specifically provides that 'Article 8 of the Agreement does not involve or provide a basis for any liability or compensation'.²¹⁷

Financial Resources, Technology Transfer and Capacity-Building

As for negotiations for previous international climate treaties, climate finance was a contentious issue at COP 21 in Paris.²¹⁸ Poorer countries sought strong assurances from developed countries that pledges for finance would be scaled up. Developed countries argued that wealthier developing countries, such as China, should make contributions to financial resourcing arrangements. These different negotiating positions were reflected in the final Agreement. The Paris Agreement calls for developed countries to provide developing countries finance for both mitigation and adaptation in continuance of their existing obligations under the 1992 Climate Change Convention.²¹⁹ Such parties, as part of a 'global effort', are also to 'continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments and channels', and this mobilisation of climate finance 'should represent a progression beyond previous efforts'.²²⁰ 'Other parties' – referring to wealthier developing countries – are encouraged to provide, or continue to provide, financial support on a voluntary basis.²²¹

The required amount of 'scaled-up' climate finance flows is not specified in the Paris Agreement, although Article 9 states that the provision of financial resources 'should aim to provide a balance between mitigation and adaptation',²²² and sets out requirements for developed country parties around the provision of information about finance flows,²²³ which will also be taken into account in the global stocktake process.²²⁴ In practice, this means the previously agreed \$100 billion USD per annum financial commitment that Convention parties made in the 2009 Copenhagen Accord will continue as a floor level of finance expected from developed countries until at least 2025.²²⁵ The Paris Agreement nevertheless encourages greater

²¹⁵ Art. 8.3 (emphasis added). ²¹⁶ Art. 8.2. ²¹⁷ Decision 1/CP.21, para. 52.

²¹⁸ See Y. Yamineva, 'Climate Finance in the Paris Outcome – Why Do Today What You Can Put off Until Tomorrow?', 25(2) *Review of European Comparative & International Environmental Law* 174 (2016); A. Zahar, 'The Paris Agreement and the Gradual Development of a Law on Climate Finance', 6(1–2) *Climate Law* 75 (2016).

²¹⁹ Art. 9(1). ²²⁰ Art. 9(3). ²²¹ Art. 9(2). ²²² Art. 9(4).

²²³ Art. 9(5). Other parties are 'encouraged' to also provide such information on a voluntary basis. See also Art. 9(7).

²²⁴ Art. 9(6).

²²⁵ At COP 15 in Copenhagen in 2009, developed country parties committed 'to a goal of mobilizing jointly \$100 billion dollars a year by 2020 to address the needs of developing countries' (see Report of the Conference of the Parties on its 15th Session, held in Copenhagen, 7–19 December 2009, FCCC/CP/2009/11/Add.1, Decision 2/CP.15(8)). The parties agreed this funding would come from a 'wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance'. One year later, the parties endorsed the \$100 billion USD goal at COP 16 in Cancun (see Cancun Convention Agreement), and the next year, at COP 17 in Durban, they established a work programme to analyse options for scaling up the mobilisation of climate finance (see Report of the Conference of the Parties on its 17th Session, held in Durban, 28 November–11 December 2011, FCCC/CP/2011/9/Add.1, Decision 1/CP.17). The decision adopting the Paris Agreement, para. 54 provides that 'developed countries intend to continue their existing collective mobilization goal through 2025 in the context of meaningful mitigation actions and transparency on implementation; prior to 2025 the Conference of the Parties serving as the meeting of the Parties to

coordination of support from public and private, bilateral and multilateral sources, such as the Green Climate Fund.²²⁶ The Paris Agreement clarifies that the Financial Mechanism of the 1992 Climate Change Convention, including its operating entities (such as the Green Climate Fund) shall serve as the financial mechanism of the Agreement.²²⁷

Articles 10 and 11 of the Paris Agreement deal with technology transfer and capacity-building respectively.²²⁸ Article 10 will be supported by a new ‘technology framework’ to guide the work of the 1992 Climate Change Convention’s existing Technology Mechanism which will also serve the Paris Agreement.²²⁹ The Paris Agreement puts a new focus on innovation as ‘critical for an effective, long-term global response to climate change’.²³⁰ It commits the 1992 Climate Change Convention’s technology and financial bodies to support research and development and developing countries’ access to technology, ‘in particular for early stages of the technology cycle’.²³¹ Support, ‘including financial support’, is also to be provided to developing country parties for implementation of Article 10, ‘including for strengthening cooperative action on technology development and transfer at different stages of the technology cycle, with a view to achieving a balance between support for mitigation and adaptation’.²³²

The Paris Agreement’s provisions on capacity-building are less developed than those on technology transfer and financial resources. The principal obligation is for all parties to cooperate to enhance the capacity of developing country parties to implement the Agreement, with a specific direction that developed country parties should enhance support for capacity-building actions in developing country parties.²³³

Implementation and Compliance

As national measures set out in the NDCs are not legally binding under the Paris Agreement, the treaty’s systems for review of implementation will be key to its effectiveness.

The Paris Agreement creates three different review processes, but leaves details regarding each to future decisions of the parties. In the first instance, review of implementation of individual NDCs will occur under an ‘enhanced transparency framework’ (Article 13), comprising a technical expert

the Paris Agreement shall set a new collective quantified goal from a floor of USD 100 billion per year, taking into account the needs and priorities of developing countries’.

²²⁶ At COP 16 in Cancun, the Parties established the Green Climate Fund (GCF) as an operating entity of the Financial Mechanism of the Convention under Article 11. The Fund is governed by a Board comprising twenty-four members, as well as alternate members, with equal number of members from developing and developed country parties, and it is accountable to, and functions under the guidance of, the Conference of the Parties to support projects, programmes, policies and other activities in developing country parties using thematic funding windows. The structure of the GCF Board was considered a win for developing countries, who argued in the negotiations that the Global Environment Fund, had failed to provide adequate support to them in the past, due in part to its governing structure reflecting the interests of developed countries. At COP 17 in Durban, parties adopted and approved the Governing Instrument for the GCF: Report of the Conference of the Parties on its 17th Session, held in Durban, 28 November–11 December 2011, Addendum, FCCC/CP/2011/9/Add.1, Decision 3/CP.17.

²²⁷ Paris Agreement, Art. 9(8). The COP also decided that the guidance to the entities entrusted with the operation of the Financial Mechanism of the Convention in relevant decisions of the COP, including those agreed before adoption of the Paris Agreement, shall apply *mutatis mutandis*. For information on the current activities and status of the GCF, see www.greenclimate.fund/home

²²⁸ These provisions are further elaborated on by the COP decision adopting the Paris Agreement. See particularly, paras. 66–84.

²²⁹ Paris Agreement, Art. 10(4). The Technology Mechanism was established at COP 16 in Cancun, see Cancun Convention Agreement, Article IV(B), para. 117.

²³⁰ Paris Agreement, Art. 10(5). ²³¹ *Ibid.* ²³² Art. 10(6). ²³³ Art. 11(3).

review and multilateral consideration. Individual country review will be supplemented by a global stocktake process (Article 14) that will take place every five years to assess parties' collective progress towards achieving the purpose and long-term goals of the Agreement, preceded by a mitigation-focused facilitative dialogue in 2018. Finally, the Agreement establishes a mechanism to facilitate implementation and promote compliance through a committee that is expert-based, non-adversarial and non-punitive (Article 15). Decision 1/CP.21 of the Conference of the Parties requires the development of effective modalities, procedures and guidelines for each of these processes.

The transparency framework will build on and enhance the review mechanisms contained in the 1992 Climate Change Convention, discussed above. Based on the concerns of some parties that the review process could interfere with national sovereignty, and place further financial burdens on developing countries, the Agreement makes clear that the transparency framework will have 'built-in flexibility which takes into account Parties' different capacities'²³⁴ and shall be implemented in a 'facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty and avoid placing undue burden on Parties'.²³⁵

In contrast to the Kyoto Protocol, which only required Annex I (developed) parties to report, the Paris Agreement places reporting requirements on all parties, but recognises countries' varying abilities to report, based on differing national circumstances. Article 13.7 requires each party regularly to provide the following:

- (a) a national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases; and
- (b) information necessary to track progress made in implementing and achieving its NDC.

Each party should also provide information related to climate change impacts and adaptation,²³⁶ and developed country parties must (and other parties that provide support should) provide information on financial, technology transfer and capacity-building support provided to developing country parties under the Agreement.²³⁷ Information submitted under the Agreement is required to undergo a technical expert review.²³⁸ The outcomes of individual party reviews will inform the global stocktake, established under Article 14.

The global stocktake is an innovation to be used to track progress towards the mitigation and adaptation goals in the Paris Agreement. The first stocktake, to be undertaken 'in the light of equity and the best available science', will be undertaken by the Conference of the Parties serving as the Meeting of the Parties in 2023 and will occur every five years thereafter, unless otherwise determined by the parties.²³⁹

The Agreement's compliance provisions are intended to be facilitative and non-punitive.²⁴⁰ Article 15 establishes a mechanism to facilitate implementation and promote compliance, which shall consist of an expert committee along the lines of the Kyoto Protocol's Facilitative Branch. The COP decision that adopted the Paris Agreement set up a work programme for the Ad Hoc Working Group on the Paris Agreement to develop modalities and procedures to be adopted by the first meeting of the Conference of Parties serving as the Meeting of the Parties.²⁴¹

²³⁴ Art. 13(1). See also Art.13(2). ²³⁵ Art.13(3). ²³⁶ Art.13(8). ²³⁷ Art.13(9). ²³⁸ Art. 13(12).

²³⁹ Art. 14(2).

²⁴⁰ The Paris Agreement adopts no new provisions on dispute settlement. Instead, Art. 24 provides the provisions of Art. 14 of the Convention on settlement of disputes shall apply *mutatis mutandis* to the Agreement.

²⁴¹ Para. 103.

Institutional Arrangements

The Paris Agreement establishes institutional arrangements to enable its effective implementation and operation. It confirms that the Conference of the Parties – the supreme body of the Convention – will serve as the meeting of the Parties to the Paris Agreement and shall make the decisions necessary to promote its effective implementation, including to establish such subsidiary bodies as deemed necessary.²⁴² The Convention secretariat will serve as the secretariat under the Agreement,²⁴³ and the rules and procedures of the Conference of the Parties and the financial procedures applied under the Convention apply *mutatis mutandis* under the Agreement.²⁴⁴ Likewise, the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation established under the 1992 Climate Change Convention will serve respectively under the Agreement.²⁴⁵

Post-Paris Developments

The Paris Agreement entered into force on 4 November 2016, shortly ahead of the COP22 Meeting in Marrakesh, which also served as the first meeting of the parties to the Paris Agreement.²⁴⁶ At the Marrakesh meeting, parties discussed the work programme arising from the Paris Agreement and agreed that a final version will be presented to the Conference of the Parties serving as the Meeting of the Parties for the Agreement for adoption at the twenty-fourth COP in 2018.²⁴⁷ A range of decisions was also adopted on other work streams established prior to the Paris Agreement, including: the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts, long-term climate finance, the report of the Green Climate Fund to the COP and guidance to the Green Climate Fund, climate technology and development, and linkages between the technology mechanism and the financial mechanism.²⁴⁸

A key outcome of the Marrakesh meeting was the adoption of the ‘Marrakesh Action Proclamation for our Climate and Sustainable Development’.²⁴⁹ In bringing together the goals of the Paris Agreement and the Sustainable Development Goals, adopted by the UN General Assembly on 25 September 2015,²⁵⁰ the Proclamation highlights that the task of the parties is to build rapidly on the momentum of the Paris Agreement and move ‘forward purposefully to reduce greenhouse gas emissions and to foster adaptation efforts, thereby benefiting and supporting the 2030 Agenda for Sustainable Development and its Sustainable Development Goals’.²⁵¹

²⁴² Art. 16(1). ²⁴³ Art. 17. ²⁴⁴ Art. 16(5). ²⁴⁵ Art. 18.

²⁴⁶ For a list of states that have ratified the Agreement, see http://unfccc.int/paris_agreement/items/9444.php

²⁴⁷ The final report of the conference had not been released at time of writing, for a list of draft decisions taken at Marrakech COP, see http://unfccc.int/meetings/marrakech_nov_2016/session/9967.php

²⁴⁸ *Ibid.*

²⁴⁹ Marrakesh Action Proclamation for our Climate and Sustainable Development, available at http://unfccc.int/meetings/marrakech_nov_2016/meeting/9567/php/view/reports.php#c

²⁵⁰ See Resolution adopted by the General Assembly on 25 September 2015, 70th Session, Agenda items 15 and 116, A/RES/70/1.

²⁵¹ Marrakesh Action Proclamation for our Climate and Sustainable Development (see n. 249). Another significant development, focusing on the role of non-state actors in implementation of the Paris Agreement, was the Marrakesh Partnership for Global Climate Action. This Partnership developed from the work of two ‘high-level champions’ appointed in accordance with COP21 Decision 1/CP.21 in order to ensure a durable connection between the Convention and the many voluntary and collaborative actions taking place outside the Convention, and to maintain momentum and climate action in the 2016–20 period. The aim of the Partnership is to provide a

Parties have so far made steady progress in implementing the central commitments of the Paris Agreement, with submissions of NDCs filed by nearly every party with the Convention secretariat. Parties' NDCs range from economy-wide emissions targets, to mitigation policies and measures, with some also including adaptation components and some made partly conditional on the support provided by other parties.²⁵² While it is encouraging to see the almost universal support for the NDC process, countries' contributions currently fall short of achieving the mitigation goal in the Paris Agreement. It has been estimated that current pledges and climate action commitments made under the Paris Agreement will lead to a warming of 2.8 °C, with only a likely (50/50) chance of holding warming to below 3.1 °C.²⁵³ An analysis of countries' pledges reveals that there has not been an increase in their ambition since the Paris Agreement was adopted in December 2015.

INTERSECTORAL LINKAGES

International climate change law has many significant linkages with other areas of international law, including human rights, humanitarian law and international trade law.²⁵⁴ These linkages are explored further in Part IV of this book. In some cases, for particular sources or emissions of greenhouse gases, a division of responsibility exists between the international climate change regime and other treaties. For instance, as discussed in the previous chapter, the Montreal Protocol on ozone-depleting substances has recently introduced amendments for a phase-out of hydrofluorocarbons (HFCs), which are also potent greenhouse gases, but not ones listed under the 1992 Climate Change Convention. Efforts to control HFCs under the Montreal Protocol will therefore have beneficial flow on effects for climate change regulation. Another pollutant which makes a major contribution to climate change, but which is not a covered greenhouse substance under the Convention, is black carbon. International regulation for black carbon has been agreed in revisions to the 1999 Gothenburg Protocol to the LRTAP (although these are not yet in force) and is the subject of study in the Arctic Contaminants Action Program.

Under the Kyoto Protocol, specific arrangements were put in place for transport-related emissions from aircraft and maritime shipping. Article 2.2 directed Annex I parties to 'pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively'. The Paris Agreement makes no reference to international aviation and maritime shipping. As a consequence, rules governing these emission sources have been developed by ICAO and IMO in processes separate from those of the main climate change negotiations.

strong foundation for how the international climate change regime will catalyse and support climate action by parties and non-party stakeholders in the period 2017–20, giving effect to the existing arrangements as agreed by parties at COP21 in Paris.

²⁵² See the UN interim register for NDCs at www4.unfccc.int/ndcregistry/Pages/Home.aspx. For a summary of countries' INDCs and NDCs and a rating of their ambition, see <http://climateactiontracker.org/indcs.html>

²⁵³ Climate Action Tracker, 'Effect of current pledges and policies', <http://climateactiontracker.org/indcs.html>

²⁵⁴ See further, R. Rayfuse and S. V. Scott (eds.), *International Law in the Era of Climate Change* (Cheltenham, UK: Edward Elgar, 2012).

Emissions from International Aviation

International aviation is one of the fastest-growing sources of greenhouse gas emissions, accounting for more than 2 per cent of the global total.²⁵⁵ Following conclusion of the Kyoto Protocol, the ICAO began work to address the impacts of the aviation industry on climate change though progress was slow.²⁵⁶ In 2007, the ICAO Assembly called for the establishment of a new Group on International Aviation and Climate Change (GIACC) composed of senior government officials representative of all ICAO regions, for the purpose of developing and recommending to the Council an aggressive Programme of Action on International Aviation and Climate Change. This Programme was finalised and accepted by the Council in June 2009. It was followed by a High-Level Meeting on International Aviation and Climate Change in October 2009 that agreed on several key initiatives including a global goal of 2 per cent annual improvement in fuel efficiency until the year 2050, and further exploration of the feasibility of more ambitious medium- and long-term goals, including carbon-neutral growth and emission reductions; development of a global CO₂ Standard for aircraft and facilitation of further operational changes to reduce aviation emissions; and development of a framework for market-based measures in international aviation.

In October 2016, in the lead up to the Paris conference, a new agreement was reached through ICAO on a global market-based measure (MBM) to control CO₂ emissions from international aviation.²⁵⁷ The ICAO action – after a long period of ineffective negotiations – seemed to be driven by a preference for a global approach rather than the emergence of a patchwork regulatory framework based on aviation emissions controls introduced by different countries and regions (e.g. under the EU emissions trading scheme).²⁵⁸ The ‘aspirational goal’ of the MBM is to keep the global net CO₂ emissions from international aviation from 2020 at the same level.²⁵⁹ The measure will take the form of a Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) to address any increase in total CO₂ emissions from international civil aviation (i.e. flights that depart in one country and arrive in another) above the 2020 levels ‘taking into account special circumstances and respective capabilities’.²⁶⁰ Offsetting will rely on the reduction of emissions outside the aviation sector through the purchase of emissions reduction units on the international carbon market, whether credits from mechanisms such as the Paris Agreement Article 6 mechanism, CDM or REDD+ activities, or allowances under emissions trading schemes.

CORSIA will be implemented in three phases. In the ‘pilot’ phase (from 2021 to 2023) and first phase (from 2024 to 2026) the scheme will apply to states that have volunteered to participate in the scheme. As of 12 October 2016, sixty-six states, representing more than 86.5 per cent of

²⁵⁵ See the *Special Report on Aviation and the Global Atmosphere* (1999) prepared at the ICAO’s request by the IPCC in collaboration with the Scientific Assessment Panel to the Montreal Protocol (available at www.grida.no/climate/ipcc/aviation/index.htm). At the request of the ICAO, the findings of this report were updated in the IPCC’s 2007 Assessment Report: IPCC, *Climate Change 2007 – Impacts, Adaptation and Vulnerability* (2007).

²⁵⁶ See IPCC, *Special Report on Aviation and the Global Atmosphere* (1999); see also ICAO Assembly Res. A33–7, resolving to promote scientific research aimed at addressing uncertainties and requesting the ICAO Council to continue to cooperate closely with the IPCC and other organisations involved in the definition of aviation’s contribution to environmental problems in the atmosphere.

²⁵⁷ ICAO Assembly Res. A39–3.

²⁵⁸ See T. Spence, ‘ICAO under Pressure to Forge Deal on Aviation Emissions’, Euractiv, 18 July 2014, www.euractiv.com/section/transport/news/icao-under-pressure-to-forge-deal-on-aviation-emissions

²⁵⁹ ICAO Assembly Res. A39–3, para. 3. ²⁶⁰ *Ibid.*, para. 5.

international aviation activity, have indicated that they intend to participate voluntarily in the global MBM scheme from its outset. CORSIA's second phase (from 2027 to 2035) will apply to all states that have an individual share of international aviation activities (measured in revenue tonne kilometres – RTKs) in year 2018 above 0.5 per cent of total RTKs or whose cumulative share in the list of states from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs. Least developed countries, small island developing states and landlocked developing states are excluded from this requirement, unless they volunteer to participate in this phase.²⁶¹

In addition to the phased implementation, the coverage of the scheme is defined on the basis of routes between states: a route will be covered by the scheme only if both states connecting the route are participating in the scheme. Once participation of states and routes covered by the CORSIA is defined in a given year from 2021, and offsetting requirements in the given year (i.e. increased emissions beyond the average baseline emissions of 2019 and 2020) are set, the requirements are distributed among aircraft operators participating in the scheme according to a formula set out in paragraph 11 of the ICAO Assembly's resolution. This formula adopts a 'dynamic approach' with movement over time from use of a sectoral rate (that combines an operator's emissions with the sector's growth factor in a given year) to a 70 per cent individual rate (combining an operator's emissions with the aircraft operator's growth in a given year) by 2033. However, CORSIA does not apply to 'low levels of international aviation activity', namely aircraft operators emitting less than 10,000 metric tonnes of CO₂ emissions from international aviation per year; aircraft with less than 5,700 kg of Maximum Take Off Mass (MTOM); or humanitarian, medical and firefighting operations.²⁶²

The scheme will also be subject to a three-yearly review by the ICAO Council 'to contribute to the sustainable development of the international aviation sector and the effectiveness of the scheme'.²⁶³

Emissions from International Shipping

Together with aircraft emissions, emissions from international shipping – particularly from the combustion of bunker fuels – contribute significantly to global atmospheric problems, such as climate change.²⁶⁴ Emissions from international shipping fall outside the international climate change regime, with efforts to pursue limitation or reduction of shipping-related bunker fuels emissions undertaken through the International Maritime Organization (IMO) since conclusion of the Kyoto Protocol.²⁶⁵ After many years of inaction, the IMO has recently stepped up its efforts in respect of this issue. In July 2011, the IMO's Marine Environment Protection Committee adopted a package of technical and operational measures to reduce carbon dioxide and other greenhouse gas emissions from international shipping.²⁶⁶ These measures – which took the form

²⁶¹ *Ibid.*, para. 9 ²⁶² *Ibid.*, para. 13. ²⁶³ *Ibid.*, para. 18.

²⁶⁴ V. Eyring, H. W. Köhler, J. van Aardenne and A. Lauer, 'Emissions from International Shipping: 1. The Last 50 Years', 110 *Journal of Geophysical Research* D17305 (2005). Although international maritime transport contributes only around 3 per cent of global greenhouse gas emissions, the size of the sector means that its overall contribution to the quantity of greenhouse gases in the atmosphere is substantial.

²⁶⁵ Kyoto Protocol, Art. 2(2).

²⁶⁶ The Marine Environment Protection Committee (MEPC) of the IMO adopted mandatory measures to reduce greenhouse gas emissions from international shipping at its 62nd Session, held in London from 11 to 15 July 2011: IMO, 'Mandatory Energy Efficiency Measures for International Shipping Adopted at IMO Environment Meeting', IMO Press Briefing 42, 15 July 2011, available at www.imo.org/MediaCentre/PressBriefings/Pages/42-mepc-ghg.aspx

of a new chapter 4 entitled 'Regulations on energy efficiency for ships' added to MARPOL Annex VI, make mandatory the Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Plan (SEEMP) for all ships. The regulations entered into force through the tacit acceptance procedure on 1 January 2013 and apply to all ships over 400 gross tonnage and above (existing ships are exempt from the requirements). Ships flagged by developing countries are able to delay implementation of the EEDI requirements for six-and-a-half years.²⁶⁷ The EEDI applies performance-based standards for energy efficiency, requiring ships built after 2013 to increase their efficiency by 10 per cent, rising to 20 per cent between 2020 and 2024 and 30 per cent thereafter. The measures take a significant step towards reducing greenhouse gas emissions from international shipping and represented the first ever, mandatory greenhouse gas reduction regime for an international industry sector.

However, it is recognised that technical and operational measures dealing with energy efficiency will by themselves be insufficient to reduce greenhouse gas emissions from international shipping in light of population growth trends and increasing world trade. Proposals have therefore been under consideration since 2011 for a market mechanism, similar to that adopted by ICAO in the aviation context, which might provide an incentive for the maritime industry to invest in technology development to further reduce emissions although consensus has proved elusive.²⁶⁸ Likewise, the issue of bunker fuel emissions, from both international aviation and international shipping, has also been a subject of discussion in the international climate change negotiations since late 2007, although no agreement on a way forward has yet been reached in this forum.²⁶⁹

CONCLUSIONS

After many years of lengthy negotiations with only limited progress, the conclusion of the 2015 Paris Agreement is seen by many as a significant turning point in global efforts to address climate change. The Paris Agreement's approach – based on nationally determined contributions to the global response to the problem – departs from the top-down structure of earlier climate change treaties, which failed to stem emissions growth. The hope is that the Agreement's bottom-up process, coupled with measures for transparency, reporting and review, could encourage ambitious, progressive action by states parties to meet the Agreement's objectives, including its long-term temperature goal.

While the Paris Agreement was speedily ratified and entered into force in November 2016, the issue of US participation has raised a question over its longer-term prospects. In this respect, a key difference between the Paris Agreement and the 1992 Climate Change Convention and its Kyoto Protocol may be critical: the 2015 Agreement applies to *all* parties rather than relying solely on developed country parties to make progress on climate change mitigation. This opens

²⁶⁷ 'IMO Adopts Mandatory Energy Efficiency Standards', 11(14) *Bridges Trade BioRes* 4 (2011).

²⁶⁸ R. Hildreth and A. Torbitt, 'International Treaties and US Laws as Tools to Regulate the Greenhouse Gas Emissions from Ships and Ports', 25(3) *International Journal of Marine and Coastal Law* 347 (2010); C. Pisani, 'Fair at Sea: The Design of a Future Legal Instrument on Marine Bunker Fuels Emissions within the Climate Change Regime', 33(1) *Ocean Development and International Law* 57 (2002).

²⁶⁹ Such negotiations were undertaken in accordance with the mandate of the 2007 Bali Action Plan, para. (1)(b)(iv), to consider 'cooperative sectoral approaches and sector-specific actions' to enhance climate change mitigation but no agreement was reached in these negotiations and the agenda item on sectoral approaches was not included in Decision 1/CP.18, the agreed outcome pursuant to the Bali Action Plan.

up space for leadership on climate change from developing countries, such as China, even if some developed countries step away from full implementation of their obligations under the treaty.

Although the Paris Agreement sets a framework for ongoing management of climate change from 2020 onwards, the Agreement leaves many details of its implementation to future negotiation rounds. This includes further guidance on the operation of market- and non-market-based approaches for reducing emissions, the role of REDD+ activities, the development of the reporting and transparency framework, and the operation of the compliance mechanism. It is likely that the detailed rules worked out for similar mechanisms under the Convention and Kyoto Protocol will serve as a model here. Other international treaty regimes will also play a role in advancing action on climate change, including the Montreal Protocol through controls on synthetic greenhouse gases, and ICAO and IMO on transport-related emissions.

On the NDCs themselves, a critical gap remains between the level of ambition they embody and the long-term temperature stabilisation goals of the Paris Agreement. Unless the NDCs can be quickly ratcheted up there is the strong prospect of overshooting temperature thresholds with devastating levels of global warming the result. The Paris Agreement – in recognition of the fact that previous delays in implementing climate change measures has made some warming inevitable – pays increased attention to adaptation measures, climate finance and issues of loss and damage. In the first Meeting of the Parties to the Agreement in Marrakesh there was also recognition of the need for implementation of the Agreement to be closely tied to work on the 2030 UN Sustainable Development Goals, as well as actions being taken at all levels of government and by a range of different actors to address climate change. For the time being, the Paris Agreement contemplates that emissions reductions will be able to be achieved through NDCs in an ambitious and timely fashion to avert climate disaster.

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9

Freshwater Resources

CHAPTER OUTLINE

This chapter examines the body of international rules that have developed to regulate access to, use and pollution of freshwater resources including lakes, rivers and transboundary groundwater aquifers. It discusses three main topics:

1. how customary international law in this field has developed;
2. seminal international judicial decisions in disputes over freshwater resources, such as the *Lac Lanoux* and *Indus Waters Kishenganga* arbitrations, and the ICJ's decisions in *Gabčikovo–Nagymaros*, *Pulp Mills* and the *Costa Rica v. Nicaragua* cases; and
3. the main treaty instruments at global and regional levels dealing with freshwater resources, including the 1997 UN Watercourses Convention and the 1992 UNECE Transboundary Watercourses Convention, as well as regional rules applicable in Europe, the Americas, Africa, Asia and the Middle East.

INTRODUCTION

A well-developed body of international rules governing freshwater resources (including rivers, lakes, groundwaters and reservoirs) is set forth in bilateral, regional and global treaties, as well as in guidelines in non-binding instruments adopted by UNEP, OECD, UNECE and other international organisations, including those in the non-governmental sector, such as the ILA and the IDI.¹ In 1997, under the auspices of the UN, and building on the work of the ILC, a global framework Convention on the Law of Non-Navigational Uses of International Watercourses (1997 UN Watercourses Convention) was adopted, elements of which are broadly recognised to reflect customary law.² The treaty entered into force on 17 August 2014 and currently has thirty-six parties.

¹ See generally D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), ch. 13; D. Freestone and M. Salman, 'Ocean and Freshwater Resources', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), ch. 15; M. Fitzmaurice, 'The Relationship Between the Law of International Watercourses and Sustainable Development', in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010), ch. 28; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), ch. 10.

² Adopted on 21 May 1997, by UNGA Res. 51/229, 36 ILM 700 (1997), in force 17 August 2014. See also Committee on Economic, Social and Cultural Rights, General Comment No. 15 (Right to Water), 26 November 2002; and Chapter 17, p. 818.

These agreements have emerged for geographical and political reasons: nearly half of the world's river basins are shared by two or more countries, and, although they comprise only about 3 per cent of the volume of water on the planet, they provide the vast majority of the supply used in human activity. Nearly 90 per cent of the total freshwater on the planet is locked into ice caps or glaciers, in the atmosphere or soil, or is deep underground.³ Thus, the primary source of the planet's available supply of freshwater is in rivers, lakes and reservoirs (though with growing water stress, groundwater aquifers are also increasingly being exploited). Scientists have estimated that the average amount of global runoff (the amount of water that is available for human use after evaporation and infiltration takes place) is between 39,500 km³ and 42,700 km³ a year, of which only around 9,000 km³ is readily accessible to humans, with an additional 3,500 km³ stored in reservoirs.⁴ Rainfall varies widely. Heavy rainfall in the Amazon Basin and south and southeast Asia compares with lower rainfall in arid and semi-arid states, which receive only 2 per cent of the world's runoff.⁵ Currently, more than 40 per cent of the world's population lives in conditions of water scarcity,⁶ and, if current consumption patterns continue, the world is projected to face a global water deficit of 40 per cent by 2030.⁷ In Africa alone, 75 to 250 million people may be exposed to increased water stress as a result of climate change by 2020.⁸ Current threats to freshwater resources are twofold: increased use, and declining quality as a result of anthropogenic sources of pollution. Future threats include climate change,⁹ which could cause significant changes in rainfall patterns and increase the frequency of extreme weather events, such as droughts;¹⁰ and population growth increasing the worldwide demand for water. Rapid population growth saw water use triple between 1959 and 2009,¹¹ and by 2050 water demand is projected to increase by a further 55 per cent.¹² Of current water uses, it is estimated that approximately 70 per cent is for agriculture, 20 per cent for industry and energy and the remainder for domestic use.¹³

Industrial and agricultural activities and population growth have increased the demand for water, urgently requiring new management techniques. Options include improved efficiency in use; greater reuse; reallocation of water; limiting pollution of supplies; and ecosystem-based management. For pollution, the direct discharge of municipal and industrial waste into rivers and lakes has been reduced in many developed countries, but pollution from diffuse sources

³ World Resources Institute, *World Resources 1992–3*, 160. See also World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), 29.

⁴ C. Revenga, J. Brunner, N. Henninger, K. Kassem and R. Payne, *Pilot Analysis of Global Ecosystems: Freshwater Systems* (World Resources Institute, 2000), 25.

⁵ *Ibid.*

⁶ *Ibid.*, 8. See also UN-Water/FAO, *Coping with Water Scarcity: Challenge of the Twenty-First Century* (2007); Chapter 10, pp. 433–4, on international efforts to combat drought and desertification.

⁷ UN World Water Assessment Programme, *The United Nations World Water Development Report 4: Water for a Sustainable World* (2015), 12. The report notes: 'The world's population is growing by about 80 million people per year. It is predicted to reach 9.1 billion by 2050, with 2.4 billion people living in Sub-Saharan Africa, the region with the most heterogeneously distributed water resources' (*ibid.*).

⁸ IPCC, *Fourth Assessment Report: Climate Change 2007*, Working Group II Report on Impacts, Adaptation and Vulnerability (2007).

⁹ UN World Water Assessment Programme, *The United Nations World Water Development Report 4: Water for a Sustainable World* (2015), ch. 10.

¹⁰ IPCC, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), 41, 49.

¹¹ World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), 101.

¹² UN World Water Assessment Programme, *The United Nations World Water Development Report 4* (2015). ¹³ *Ibid.*

(non-point-source pollution) has proved to be more difficult to control. Non-point-source pollution includes agricultural, industrial and urban runoff, which transports pesticides, nitrates, phosphates and other pollutants into the water supply. This source of pollution of freshwater can be divided into three main types: excess nutrients from sewage and soil erosion; pathogens from sewage; and heavy metals and synthetic organic compounds from industry, mining and agriculture.¹⁴

These and other issues were addressed by UNCED, with Agenda 21 setting out seven programme areas to protect the quality and supply of freshwater resources,¹⁵ of which the two most relevant to the development of international law related to integrated water resources development and management, and protection of water resources, water quality and aquatic ecosystems.¹⁶ The 2002 World Summit on Sustainable Development (WSSD) adopted a number of specific goals, including commitments to halve, by 2015, the proportion of people who are unable to reach or to afford safe drinking water, and the proportion of people without access to basic sanitation.¹⁷ Providing 'water security' continues to be an important focus of the global sustainable development agenda as evidenced by the outcome document of the Rio+20 Summit, *The Future We Want*, which declared 'water is at the core of sustainable development'.¹⁸ This is supported by Goal 6 of the 2015–30 Sustainable Development Goals that calls for ensuring access to water and sanitation for all.

CUSTOMARY LAW

The rules of international environmental law to protect freshwater resources, including international watercourses, from pollution and overuse, have developed primarily as piecemeal and ad hoc responses to problems with particular rivers, lakes and freshwater ecosystems. The most important of these are described in this chapter, although the contents should not be treated as exhaustive. State practice is reflected in this body of treaty law, in decisions of the ICJ and international arbitral tribunals, in the work of the ILC and private organisations, such as the ILA and the IDI, and in national legislation. These generally address the *use* of freshwater and its contamination by *pollution*. Notwithstanding such practice, in the mid 1980s it was authoritatively claimed that 'there are no rules of global application and, in particular, there is no rule of customary international law prohibiting pollution of international rivers'.¹⁹ If the view was accurate when expressed, it certainly no longer holds good today. Activities which may be harmful to international rivers and other freshwaters are subject to the general principles and rules identified in Chapter 6, including Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, as well as environmental impact assessment and other procedural requirements associated with the duty to cooperate, which reflect

¹⁴ C. Revenga, J. Brunner, N. Henninger, K. Kassem and R. Payne, *Pilot Analysis of Global Ecosystems: Freshwater Systems* (World Resources Institute, 2000), 33 (the pollutants include sediments, nutrients, organic materials, disease-causing agents, heavy metals, toxic chemicals, acids, chlorides and increased temperatures).

¹⁵ Agenda 21, Chapter 18, 'Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources'.

¹⁶ The other programme areas related to: assessment of water resources; drinking water supply and sanitation; water and sustainable urban development; water and sustainable food production; and the impact of climate change on water resources.

¹⁷ WSSD Plan of Implementation, paras. 24–8. ¹⁸ Rio+20 Summit, *The Future We Want*, para. 119.

¹⁹ J. Sette-Camara, 'Pollution of International Rivers', 186 *Receuil des Cours* 117–218 at 198 (1984).

customary law.²⁰ Moreover, two watercourse treaties of global application are now in force: the UN 1997 Watercourses Convention and the UNECE 1992 Watercourses Convention which, from February 2013, became open to accession by all UN member states.

As early as 1929, the Permanent Court of International Justice (PCIJ) held that the utilisation of international rivers, including their flow, was subject to international law: the Court identified the ‘community of interests in a navigable river [which] becomes the basis of a common legal right, the essential features of which are the perfect equality of all riparian states in the use of the whole course of the river and the exclusion of any preferential privilege of any one riparian in relation to others’.²¹ Some seventy years later, the International Court of Justice (ICJ) revisited the paragraph and extended its application to non-navigational uses:

Modern development of international law has strengthened this principle for non-navigational uses of international watercourses as well, as evidenced by the adoption of the Convention of 21 May 1997 on the Law of the Non-Navigational Uses of International Watercourses by the United Nations General Assembly. The Court considers that Czechoslovakia, by unilaterally assuming control of a shared resource, and thereby depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube – with the continuing effects of the diversion of these waters on the ecology of the riparian area of the Szigetköz – failed to respect the proportionality which is required by international law.²²

The extended principle reflects an approach that has received wide support from states. It indicates that water resources which are the subject of a ‘common legal right’, including rivers or lakes or groundwaters, may not be used by states in such a manner as to prevent or otherwise limit other ‘riparian’ states from making full use of their equitable and reasonable entitlements in relation to that shared resource. Although international law does not prohibit all pollution, it is clear that the quality of freshwaters should not be altered in such a way as to result in significant or substantial damage to the point that the resource may no longer be used, or that its potential for use is materially diminished.²³

The view that the rights of states in the use of shared rivers are not unlimited is now well established and reflected in customary law. As early as 1933, the Conference of American States declared that the exploitation of international rivers should not injure the rights of the neighbouring states and should be subject to a process of notification and agreement, stating that ‘no state may, without the consent of the other riparian state, introduce into water courses of an international character, for the industrial or agricultural exploitation of their waters, any alteration which may prove injurious to the margin of the other interested state’.²⁴ States are

²⁰ See Chapter 6, pp. 206–13 and 213ff.; relied upon by Hungary in the *Gabčíkovo–Nagyymaros Project* case at the ICJ; see pp. 345–51; also relied upon by Argentina in the *Pulp Mills* case at the ICJ; see pp. 351–5.

²¹ *Case Concerning the Territorial Jurisdiction of the International Commission of the River Oder*, Judgment No. 16, PCIJ (1929) Ser. A No. 23, 27. The language was similar to that of the ICJ in the *Fisheries Jurisdiction* case, nearly fifty years later (see Chapter 11, pp. 512–13).

²² (1997) ICJ Reports 7, para. 85. See also the Separate Opinion of Judge Kooijmans in the *Kasikili/Sedudu Island* case (*Botswana v. Namibia*) (1999) ICJ Reports 1045, paras. 31–7.

²³ On the level of pollution which may be permitted, see Australia’s answer to a question from Sir Humphrey Waldock in the *Nuclear Tests* cases, Chapter 7, pp. 255–6.

²⁴ Declaration on the Industrial and Agricultural Use of the International Rivers, Adopted by the Seventh International Conference of American States, Montevideo, 1933, in Whiteman, 3 *Digest of International Law* 936.

subject to a customary obligation to negotiate, consult and cooperate to reach an equitable solution to the problems posed by activities that may affect international rivers providing a shared natural resource, including water pollution and excessive use. This view is reflected in treaties, including some very early ones,²⁵ and non-binding instruments.²⁶ It is also reflected in the World Bank's Operational Policy 7.50 on Projects on International Waterways, which records the Bank's recognition that 'the co-operation and goodwill of riparians is essential for the efficient use and protection of the waterway'. To that end, the Bank seeks to ensure that international aspects of a project on an international waterway are dealt with at the earliest possible opportunity, and requires the state receiving financial support formally 'to notify the other riparians of the proposed project and its Project/Program Details'.²⁷ The Bank will not lend if the borrower does not notify or allow the Bank to notify.

Against this background, the law in this area continues to evolve, reflected in an increasing number of judicial pronouncements. The ICJ, for instance, has confirmed that general international law requires states to undertake an environmental impact assessment (EIA) where there is a risk that a proposed activity may have a significant adverse impact on a shared water resource, although the content of this requirement has not been elaborated.²⁸ And it has indicated that states may also adopt regulatory measures, albeit limited ones, in order to pursue environmental protection, even if this has the effect of restricting the rights of another state over a watercourse.²⁹

The following sections detail important milestones in the development of customary law relating to water resources, including the findings of international courts and tribunals and the work of organisations focused on codification and development of law in the field.

Lac Lanoux Arbitration

The 'community of interests' approach invoked by the PCIJ in 1929 was reflected in the 1957 arbitral award in the *Lac Lanoux* case between France and Spain.³⁰ This concerned a proposal by the French government to authorise the construction of a barrage to channel water through a hydroelectric power plant, diverting approximately 25 per cent of the flow of the Carol River before returning the same amount of water to the river at a point prior to its use by farmers in Spain. The arbitral tribunal held that the proposed French works did not constitute an infringement of Spain's rights under earlier treaties, although the tribunal did suggest that the Spanish claim to an infringement of rights might have been stronger if it had shown, which it had not, that the proposed works would pollute the waters of the River Carol or change the chemical composition, temperature or other characteristics of the waters in such a way as to

²⁵ See e.g. Convention Relative to the Development of Hydraulic Power Affecting More than One State, Geneva, 9 December 1923, 36 LNTS 76; and the UN 1997 Watercourses Convention, pp. 361-2.

²⁶ See pp. 342-5. See generally Chapter 6, pp. 225-7.

²⁷ OP 7.50, June 2001, paras. 3 and 4. The Bank will ascertain whether the riparians have entered into agreements or arrangements for the international waterway and, following notification, if another riparian raises objections to the proposed project, the Bank may appoint an independent expert to examine the issues (paras. 5 and 6). Para. 7 permits certain limited exceptions.

²⁸ *Pulp Mills* case (*Argentina v. Uruguay*), paras. 204-5, pp. 351-5. See also *Costa Rica v. Nicaragua* cases, para. 104.

²⁹ *Case Concerning the Dispute Regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, pp. 34-6, paras. 85-9. Nicaragua, in adopting measures restricting Costa Rica's navigation rights, was pursuing the legitimate purpose of protecting the environment.

³⁰ 24 ILR 101 (1957).

injure its interests.³¹ The award considered whether riparian states have any obligation to notify and consult with others who may be potentially affected prior to engaging in activities which may harm a shared river resource. The tribunal held that:

France is entitled to exercise her rights; she cannot ignore Spanish interests. Spain is entitled to demand that her rights be respected and that her interests be taken into consideration.³²

However, in finding that France was not in breach of its obligation to take into account Spain's interests in the course of negotiations, the tribunal stated that 'the rule that states may utilise the hydraulic power of international watercourses only on condition of a *prior* agreement between the interested states cannot be established as a custom, even less as a general principle of law'.³³

The award indicates the limits imposed by international law on the use of shared natural resources, and on procedural obligations linked to the substantive aspects of environmental protection and conservation. The award heralded provisions now set forth in the 1992 UNECE Water Convention and the 1997 UN Watercourses Convention, as well as non-binding rules. It also reflected, however, the limited state of customary law in 1957.

ILA: 1966 Helsinki Rules

The adoption in 1966 of the ILA's non-binding Helsinki Rules on the Uses of the Waters of International Rivers marked an important further stage in international efforts to manage and protect freshwaters.³⁴ The Helsinki Rules were not the first attempt by international lawyers to consider this question,³⁵ but reflected a committed effort to identify, in a comprehensive manner, the rights and obligations of states. The Rules govern the use of the waters of an international drainage basin except as otherwise provided by applicable treaty or custom,³⁶ and provide that each basin state is entitled to 'a reasonable and equitable share in the beneficial use' of the waters, in accordance with the relevant factors in each case.³⁷ States are obliged to prevent new forms of water pollution or any increase in the degree of existing pollution which would cause 'substantial injury' in the territory of other basin states, and to take all reasonable measures to abate existing pollution.³⁸ Violation of these obligations creates a responsibility for the injury caused, or requires negotiations to reach an equitable settlement.³⁹ The approach of the Helsinki Rules is generally reflected in the subsequent work of the IDI on pollution of rivers and lakes.⁴⁰

³¹ *Ibid.*, 123. ³² *Ibid.*, 140. ³³ *Ibid.*, 130.

³⁴ 20 August 1966, Fifty-Second Report of the International Law Association (1967), 484; 2 IPE 5741. See also ILA, Helsinki Rules on Private Law Remedies for Transboundary Damage in International Watercourses (1996).

³⁵ See e.g. Institut de Droit International, Resolution on International Regulations Regarding the Use of International Watercourses for Purposes other than Navigation (Preamble), Madrid, 19 April 1911, 11 IPE 5702.

³⁶ Art. I. 'International drainage basin' is described as 'a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus' (Art. II).

³⁷ Arts. III, IV and V(1).

³⁸ Art. X(1). 'Water pollution' is defined as 'any detrimental change resulting from human conduct in the natural composition, content or quality' of waters (Art. IX).

³⁹ Art. XI.

⁴⁰ Resolution on Pollution of Rivers and Lakes and International Law, Athens, 1979, 58-1 *Annuaire de l'Institut de Droit International* 193 (1979).

Since the Helsinki Rules, the ILA has also adopted non-binding Rules on Water Pollution in an International Drainage Basin,⁴¹ and Rules on International Groundwaters.⁴² The Groundwaters Rules call on states to prevent or abate the pollution of international groundwaters ‘in accordance with international law applicable to existing, new, increased and highly dangerous pollution’.⁴³ International groundwaters are the ‘waters of an aquifer that is intersected by the boundary between two or more states’, which are basin states within the meaning of the 1966 Helsinki Rules.⁴⁴

In 2004, the ILA adopted the Berlin Rules on Water Resources to update and replace the Helsinki Rules.⁴⁵ By Article 1, the Rules purport to ‘express international law applicable to the management of the waters of international drainage basins and applicable to all waters, as appropriate’. The Rules are divided into fourteen chapters, and are intended to update and replace the 1966 Rules, but they were not adopted with the unanimous support of all members of the ILA Committee; four members put in a strong dissent, including the comment that the Berlin Rules ‘mark a radical and unwarranted departure from existing customary law’ and that their adoption ‘would diminish the influence and reputation of the ILA’.⁴⁶

Chapter II of the Berlin Rules deals with principles of management for all waters, including principles on participation, conjunctive management, integrated management and sustainability, and a commitment that states ‘shall take all appropriate measures to prevent or minimize environmental harm’.⁴⁷ Chapter III addresses internationally shared waters, and includes rules on participation, cooperation and equitable utilisation, as well as preferences among uses and the obligation of basin states to ‘refrain from and prevent acts or omissions within their territory that cause significant harm to another basin State having due regard for the right of each basin State to make equitable and reasonable use of the waters’.⁴⁸ Chapter IV reflects a new direction on the rights of persons, including access to water and public participation, and the protection of particular communities. Chapter V provides for the protection of the aquatic environment, including ecological integrity and the precautionary approach, prevention of the introduction of hazardous substances and pollution and the establishment of water quality standards. Chapter VI addresses the details of environmental impact assessment, and Chapter VII deals with extreme situations. Chapter VIII addresses the protection of groundwaters, including aquifers, and Chapter IX deals with navigation. Chapter X provides for the protection of waters and water installations during times of war and armed conflict, and Chapter XI addresses general rules on

⁴¹ Montreal, 4 September 1982, Sixtieth Report of the International Law Association (1983), 535.

⁴² Seoul, 30 August 1986, 62 ILA 251 (1987); on the background, see D. Caponera and D. Alhèritière, ‘Principles for International Groundwater Law’, 18 *Natural Resources Journal* 589 (1978); L. Teclaff and E. Teclaff, ‘Transboundary Groundwater Pollution: Survey and Trends in Treaty Law’, 19 *Natural Resources Journal* 629 (1979); L. Teclaff and A. Utton, *International Groundwater Law* (Oxford: Oxford University Press, 1981); M. Papas, ‘International Groundwater Protection: An Australian Perspective’, 19 *Water Law* 229 (2008).

⁴³ Art. 3(1).

⁴⁴ Art. 1. The Rules use the term ‘aquifer’ to include ‘all underground water bearing strata capable of yielding water on a practicable basis, whether these are in other instruments or contexts called by another name such as “groundwater reservoir”, “groundwater catchment area” etc. including the waters in fissured or fractured rock formations and the structures containing deep, so-called “fossil waters”’ (*ibid.*).

⁴⁵ Seventy-First Report of the International Law Association (2004), 344.

⁴⁶ ILA Berlin Conference 2004 – Water Resources Committee Report Dissenting Opinion (Slavko Bogdanovic, Charles Bourne, Stefano Burchi, Patricia Wouters), available at www.internationalwaterlaw.org/documents/intldocs/ila_berlin_rules_dissent.html

⁴⁷ Art. 9. ⁴⁸ Art. 16.

international cooperation, including exchange of information, notification and consultation, as well as the harmonisation of national laws.⁴⁹ Chapter XII provides for state responsibility, Chapter XIII provides for legal remedies, and Chapter XIV addresses the settlement of international disputes.

These non-governmental efforts were followed by non-binding instruments adopted under the auspices of international organisations. This included recommendations and guidelines developed by the UN⁵⁰ and UNEP,⁵¹ the OECD⁵² and the UNECE, as well as a large number of conventions and the EU Water Framework Directive, which have sought to take a drainage basin approach.⁵³

ILC 2008: Articles on Transboundary Aquifers⁵⁴

Alongside private organisations such as the ILA and IDI, the UN ILC has played a major role in the development of international law governing freshwater resources. Perhaps its most significant contribution to date has been the codification efforts reflected in its draft Articles on the Law of Non-Navigational Uses of International Watercourses,⁵⁵ which were the basis for the 1997 UN Watercourses Convention, discussed further below.

In 2008, the ILC adopted further draft Articles on the Law of Transboundary Aquifers, drawing largely from the approach of the 1997 UN Watercourses Convention.⁵⁶ The Articles provide that each aquifer state 'has sovereignty over the portion of a transboundary aquifer or aquifer system located within its territory' and 'shall exercise its sovereignty in accordance with international law and the present draft articles'.⁵⁷ According to general principles set forth in Part II, such

⁴⁹ Art. 62.

⁵⁰ UN Water Conference, Recommendation on Environment and Health, Mar del Plata, 25 March 1977, 26 IPE 166, E/CONF.70/29; UNGA Resolution on the Human Right to Water and Sanitation, 26 July 2010, A/64/L.63/Rev.1; UN Human Rights Council Resolution on Human Rights and Access to Safe Drinking Water and Sanitation, 24 September 2010, A/HRC/15/L.1.

⁵¹ UNEP, Environmental Guidelines for Watershed Development, UNEP EMG 3 (1982). See also, UNEP, Guidelines for the Integrated Management of the Watershed: Phytotechnology and Ecohydrology, Freshwater Management Series No. 5 (2002).

⁵² See OECD Council Recommendation, Control of Eutrophication of Waters, 14 November 1974, OECD C(74)220; OECD Council Recommendation, Strategies for Specific Water Pollutants Control, 14 November 1974, OECD C(74)221; OECD Council Recommendation, Water Management Policies and Instruments, 5 April 1978, OECD C(78)4 (Final). See also the OECD's more recent work on water summarised in *OECD Work on Water* (2015–16), at www.oecd.org/env/resources/OECD-work-on-Water-2015-16.pdf

⁵³ L. Teclaff and E. Teclaff, 'Transboundary Toxic Pollution and the Drainage Basin Concept', 25 *Natural Resources Journal* 589 (1985); 'The International Law of the Hydrologic Cycle', 31 *Natural Resources Journal* 213 (1991) (special issue) (1991).

⁵⁴ S. C. McCaffrey, 'The International Law Commission Adopts Draft Articles on Transboundary Aquifers', 103(2) *American Journal of International Law* 272 (2009); K. Mechlem, 'Moving Ahead in Protecting Freshwater Resources: The International Law Commission's Draft Articles on Transboundary Aquifers', 22(4) *Leiden Journal of International Law* 801 (2009).

⁵⁵ 30 ILM 1575 (1991). The ILC's work began in 1971, following a request from the UN General Assembly. A first reading of a full set of draft Articles was adopted at the ILC's 43rd Session in 1991, and a revised set of draft Articles was adopted in 1994. The tension between the interests of upstream and downstream states was tangible during the course of the ILC's efforts, and in the diplomatic negotiations leading to the adoption of the 1997 UN Watercourses Convention.

⁵⁶ 2006 ILC Report, UN Doc. A/61/10, Chapter VI, 183–245. ILC, 'Report of the International Law Commission on the Work of Its Sixtieth Session', 63 UN GAOR, UN Doc. A/63/10 (2008). On the 1997 UN Watercourses Convention, see pp. 361–3.

⁵⁷ Art. 3.

states must use transboundary aquifers or aquifer systems 'according to the principle of equitable and reasonable utilization'⁵⁸ and shall 'take all appropriate measures to prevent the causing of significant harm to other aquifer States or other States in whose territory a discharge zone is located'.⁵⁹ The Articles provide for a general obligation to cooperate, exchange of information, and bilateral and regional arrangements.⁶⁰ Part III is concerned with protection, preservation and management, including the protection of ecosystems, of recharge and discharge zones, and the prevention, reduction and control of pollution, and monitoring.⁶¹ Part IV deals with other matters, including protection in times of war and armed conflict, emergency situations and national security. The Articles have no provision on the settlement of disputes.

Case Concerning the Gabčíkovo–Nagymaros Project⁶²

This case concerned Hungary's dispute with Czechoslovakia (and later Slovakia) over the construction of the Gabčíkovo and Nagymaros barrages and the diversion of the Danube River in Slovakia.⁶³ The dispute arose over the 1977 Treaty Providing for the Construction and Joint Operation of the Gabčíkovo–Nagymaros Barrage System, according to which Hungary and Czechoslovakia agreed to build the Dunakiliti dam and reservoir, a barrage system including two hydroelectric power stations (one on Czechoslovak territory at Gabčíkovo, and one on Hungarian territory at Nagymaros), and a 25 km bypass canal for diverting the Danube from its original course through a system of locks and then back to its original course.⁶⁴ The power generators were originally due to begin operation between 1986 and 1990 but the deadline was subsequently put back to 1994. In 1988, as a result of public pressure, the Hungarian Parliament resolved that ecological interests should take priority over economic considerations and prompted the government to order a re-evaluation of the project. This led to a decision by the Hungarian government in May 1989 to suspend construction on its part of the Gabčíkovo barrage, and work on the Nagymaros barrage.⁶⁵ Following diplomatic exchanges and unsuccessful negotiations between experts appointed by both sides, the Czechoslovak government decided to continue with a 'provisional solution' to limit construction works and the unilateral diversion of the Danube to the Slovak territory.⁶⁶ In February 1992, Hungary formally protested against the 'provisional solution' and the unilateral diversion. In April 1992, the European Commission accepted a request by the two governments to play a conciliation role and to chair

⁵⁸ Art. 4. ⁵⁹ Art. 6. ⁶⁰ Arts. 7–9. ⁶¹ Arts. 10–13.

⁶² *Case Concerning the Gabčíkovo–Nagymaros Project* (1997) ICJ Reports 7; S. Stec and G. Eckstein, 'Of Solemn Oaths and Obligations: The Environmental Impact of the ICJ's Decision in the Case Concerning the Gabčíkovo–Nagymaros Project', 8 *Yearbook of International Environmental Law* 41 (1997); C. Bourne, 'The Case Concerning the Gabčíkovo–Nagymaros Project: An Important Milestone in International Water Law', 8 *Yearbook of International Environmental Law* 3 (1997); A. E. Boyle, 'The Gabčíkovo–Nagymaros Case: New Law in Old Bottles', 8 *Yearbook of International Environmental Law* 13 (1997); J. Klabbers, 'The Substance of Form: The Case Concerning the Gabčíkovo–Nagymaros Project, Environmental Law, and the Law of Treaties', 8 *Yearbook of International Environmental Law* 32 (1997).

⁶³ Notwithstanding the fact that the ICJ did not apparently have jurisdiction, in October 1992 Hungary filed an application to the ICJ to submit its dispute. See Declaration of Hungary on the Termination of the 1977 Treaty on the Construction and Operation of the Gabčíkovo–Nagymaros Barrage System, 16 May 1992, 32 ILM 1260 (1993); Special Agreement Between Hungary and the Slovak Republic for Submission to the ICJ of the Differences Between Them, 32 ILM 1294 (1993). In July 1993, following further negotiations, Hungary and Slovakia signed a Special Agreement submitting the matter to the ICJ. Although Hungary's Original Application was superseded by the 1993 Special Agreement, it provides interesting historical evidence of Hungary's views on the rules of customary law concerning the diversion of an international river.

⁶⁴ Budapest, 16 September 1977, 32 ILM 1247 (1993). ⁶⁵ Paras. 3 and 4. ⁶⁶ Paras. 5–8.

a trilateral committee of experts to find a technically feasible solution. The European Commission asked both sides to refrain from taking steps during the investigation that would prejudice the committee's findings.⁶⁷ On 19 May 1992, Hungary sought unilaterally to terminate the 1977 Treaty with effect from 25 May 1992.⁶⁸ In October 1992, following the failure to settle the dispute, Hungary filed its Original Application with the ICJ, and later that month Czechoslovakia diverted a significant proportion of the Danube into a by-pass canal.

In July 1993, by Special Agreement the two sides requested the ICJ to consider the legality of certain acts of each state. The Agreement asked the ICJ to decide, on the basis of the 1977 Treaty and 'rules and principles of general international law', three questions: (1) whether Hungary was entitled to suspend and subsequently abandon the works on the project; (2) whether the Czech and Slovak Federal Republic was entitled to proceed to and put in operation the 'provisional solution'; and (3) what were the legal effects of the notification on 19 May 1992 of the termination of the 1977 Treaty?⁶⁹ Additionally, the ICJ was asked to determine the legal consequences arising from its judgment on these matters. Under the Special Agreement, the parties also agreed to establish and implement a temporary water management regime, and to request immediate consultation if one party believed that the other party's conduct was endangering its rights, and not to seek protection by asking the ICJ to indicate provisional measures.⁷⁰

In the proceedings before the ICJ, Hungary sought to rely on a number of grounds under the law of treaties and general rules of state responsibility to justify its suspension of works and subsequent termination of the 1977 Treaty. To justify its conduct, Hungary relied primarily on a 'state of ecological necessity', contending that the various installations in the Gabčíkovo–Nagyymaros system of locks had been designed to enable the Gabčíkovo power plant to operate in peak mode. Water would only have come through the plant twice each day, at times of peak power demand. Operation in peak mode required the vast expanse (60 km²) of the planned reservoir at Dunakiliti, as well as the Nagyymaros dam, which was to alleviate the tidal effects and reduce the variation in the water level downstream of Gabčíkovo. Hungary argued that such a system, considered to be more economically profitable than using run-of-the-river plants, carried ecological risks which it considered to be unacceptable. These included the danger of silting up of the side-arms of the Danube, thereby impairing water quality; the risk of eutrophication of surface waters; the reduction of water flow in the Danube itself; and the resulting loss of fluvial fauna and flora.⁷¹

As for the dam at Nagyymaros, Hungary argued that, if it had been built, the bed of the Danube upstream would have silted up causing deterioration of water quality in this sector. Moreover, the operation of the Gabčíkovo power plant in peak mode would have occasioned significant daily variations in the water level in the reservoir upstream, threatening aquatic habitats. Hungary also contended that the construction and operation of the Nagyymaros dam would have caused the erosion of the riverbed downstream, lowering the water level in this section of the river and appreciably diminishing the yield of the bank-filtered wells providing two-thirds of the

⁶⁷ Para. 12. ⁶⁸ Para. 13. ⁶⁹ See *Case Concerning the Gabčíkovo–Nagyymaros Project* (1997) ICJ Reports 7, para. 2.

⁷⁰ 1993 Special Agreement, Art. 4; on provisional measures under Art. 41 of the Statute of the ICJ, see Chapter 5, p. 183.

⁷¹ (1997) ICJ Reports 7, para. 40.

water supply to the city of Budapest. The filter layer would also have shrunk or perhaps even disappeared, and fine sediments would have been deposited in certain pockets in the river, further contributing to the deterioration of water quality.⁷²

The ICJ considered the question of the existence of a 'state of ecological necessity' in light of the criteria laid down by the ILC in Article 33 of the draft Articles on the International Responsibility of States adopted on first reading, which the parties had agreed were applicable.⁷³ Article 33 at the time of the Court's decision was worded as follows:

1. A state of necessity may not be invoked by a State as a ground for precluding the wrongfulness of an act of that State not in conformity with an international obligation of the State unless:
 - (a) the act was the only means of safeguarding an essential interest of the State against a grave and imminent peril; and
 - (b) the act did not seriously impair an essential interest of the State towards which the obligation existed.
2. In any case, a state of necessity may not be invoked by a State as a ground for precluding wrongfulness:
 - (a) if the international obligation with which the act of the State is not in conformity arises out of a peremptory norm of general international law; or
 - (b) if the international obligation with which the act of the State is not in conformity is laid down by a treaty which, explicitly or implicitly, excludes the possibility of invoking the state of necessity with respect to that obligation; or
 - (c) if the State in question has contributed to the occurrence of the state of necessity.

In the ICJ's view, draft Article 33 established five basic conditions for the existence of a state of necessity, which reflected customary international law:

- (1) the breach of an international obligation must have been occasioned by an 'essential interest' of the state which was the author of the wrongful act;
- (2) that interest must be threatened by a 'grave and imminent peril';
- (3) the act being challenged should be the 'only means' of safeguarding that interest;
- (4) that act should not have 'seriously impaired an essential interest' of the state towards which the obligation existed; and
- (5) the state which was the author of that act should not have 'contributed to the occurrence of the state of necessity'.⁷⁴

The ICJ stated that it had 'no difficulty in acknowledging that the concerns expressed by Hungary for its natural environment in the region affected by the Gabčíkovo–Nagymaros Project related to an "essential interest" of that state, within the meaning given to that expression in [Draft] Article 33'.⁷⁵ However, the ICJ did not consider that the objective existence of a 'peril' had been established, notwithstanding the 'serious uncertainties' raised by Hungary as to the ecological impact of putting in place the Gabčíkovo–Nagymaros barrage system. The ICJ stated that:

⁷² *Ibid.*

⁷³ For the text of the draft Articles adopted on first reading, see ILC, *Yearbook of the International Law Commission* (1996-II), Part 2, 58–65. In 2001, the ILC adopted a final text of the Articles; see Chapter 16, p. 769.

⁷⁴ *Case Concerning the Gabčíkovo–Nagymaros Project* (1997) ICJ Reports 7, para. 52. ⁷⁵ *Ibid.*, para. 53.

The word 'peril' certainly evokes the idea of 'risk'; that is precisely what distinguishes 'peril' from material damage. But a state of necessity could not exist without a 'peril' duly established at the relevant point in time; the mere apprehension of a possible 'peril' could not suffice in that respect. It could moreover hardly be otherwise, when the 'peril' constituting the state of necessity has at the same time to be 'grave' and 'imminent'. 'Imminence' is synonymous with 'immediacy' or 'proximity' and goes far beyond the concept of 'possibility'. As the International Law Commission emphasized in its commentary, the 'extremely grave and imminent' peril must 'have been a threat to the interest at the actual time' (Yearbook of the International Law Commission, 1980, vol. II, Part 2, p. 49, para. 33). That does not exclude, in the view of the Court, that a 'peril' appearing in the long term might be held to be 'imminent' as soon as it is established, at the relevant point in time, that the realization of that peril, however far off it might be, is not thereby any less certain and inevitable.⁷⁶

The ICJ's approach to the issue of the existence of an environmental 'peril' seemingly does not apply the precautionary principle.⁷⁷ Without ruling on the merits of the parties' differing views as to the likelihood of environmental damage (advanced in an 'impressive amount of scientific material'), the ICJ found that the perils invoked by Hungary were not sufficiently established in 1989, nor were they 'imminent' since they were long-term in nature and uncertain.⁷⁸ As a consequence of these findings, the ICJ concluded that Hungary's ecological concerns over the project were not sufficient to justify a suspension of works in 1989 on the basis of necessity.⁷⁹

The ICJ then turned to the question of whether the Czech and Slovak Federal Republic was entitled to proceed to the 'provisional solution' following Hungary's suspension of works on the project. Czechoslovakia had submitted that the 'provisional solution' was essentially no more than what Hungary had already agreed to and that the only modifications made were those which had become necessary by virtue of Hungary's decision not to implement its treaty obligations. While the ICJ agreed that Hungary, in concluding the 1977 Treaty, had consented to the damming of the Danube and the diversion of its waters into the by-pass canal, it had done so 'only in the context of a joint operation and a sharing of its benefits'. Thus, although Hungary's refusal to continue with the joint operation constituted a violation of its legal obligations, that did not mean that Hungary forfeited its basic right to an equitable and reasonable sharing of the resources of an international watercourse.⁸⁰ Accordingly, the ICJ concluded that Czechoslovakia had committed an internationally wrongful act by putting the provisional solution into operation. Significantly, the ICJ distinguished between preparatory actions and the wrongful act itself in determining the point in time at which the internationally wrongful act crystallised. The ICJ noted that:

between November 1991 and October 1992, Czechoslovakia confined itself to the execution, on its own territory, of the works which were necessary for the implementation of Variant C, but which could have been abandoned if an agreement had been reached between the parties and did not therefore predetermine the final decision to be taken. For as long as the Danube had not been unilaterally dammed, Variant C had not in fact been applied.⁸¹

⁷⁶ *Ibid.*, para. 54. ⁷⁷ Principle 15 of the Rio Declaration; see Chapter 6, p. 229.

⁷⁸ *Case Concerning the Gabčíkovo-Nagymaros Project* (1997) ICJ Reports 7, paras. 56 and 57. ⁷⁹ *Ibid.*, para. 57.

⁸⁰ *Ibid.*, para. 78. ⁸¹ *Ibid.*, para. 79.

The ICJ went on to consider whether the wrongfulness of Czechoslovakia's actions might be precluded on the ground that it was a lawful countermeasure, adopted in response to Hungary's prior failure to comply with its obligations under the 1977 Treaty. While the ICJ concluded that Czechoslovakia's actions met some of the conditions for lawful countermeasures, they did not satisfy the 'important consideration' that the 'effects of a countermeasure must be commensurate with the injury suffered, taking into account the rights in question'.⁸² Referring to the decision of the PCIJ in the *River Oder* case⁸³ and modern developments evidenced by the adoption of the Watercourses Convention, the ICJ stated that:

Czechoslovakia, by unilaterally assuming control of a shared resource, and thereby depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube – with the continuing effects of the diversion of these waters on the ecology of the riparian area of the Szigetkoz – failed to respect the proportionality which is required by international law.⁸⁴

Consequently, the ICJ held that the diversion of the Danube carried out by Czechoslovakia was not a lawful countermeasure because it was not proportionate.

To justify its termination of the 1977 Treaty, Hungary again raised an argument of necessity, together with arguments based on: the impossibility of performance of the Treaty; the occurrence of a fundamental change of circumstances; the material breach of the Treaty by Czechoslovakia; and the development of new norms of international environmental law. These arguments were dismissed by the ICJ, which found that Hungary's purported notification of termination in 1992 did not have the legal effect of terminating the 1977 Treaty and related instruments.⁸⁵ However, the ICJ pointed out that newly developed norms of environmental law were relevant for the implementation of the Treaty and that the Treaty itself made provision for their incorporation, with the agreement of the parties, through various Articles 'requiring the parties, in carrying out their obligations to ensure that the quality of the water in the Danube is not impaired and that nature is protected, to take new environmental norms into consideration when agreeing upon the means to be specified in the Joint Contractual Plan'.⁸⁶ The ICJ remarked that the 'awareness of the vulnerability of the environment and the recognition that environmental risks have to be assessed on a continuous basis have become much stronger in the years since the Treaty's conclusion'.⁸⁷ The ICJ recognised that both parties agreed on the need to take environmental concerns seriously and to take the required precautionary measures, but fundamentally disagreed over the consequences this had for the joint project.⁸⁸ However, the ICJ itself provided no resolution of this issue, instead recommending that 'third-party involvement may be helpful and instrumental in finding a solution, provided each of the parties is flexible in its position'.⁸⁹

The ICJ noted that it was of 'cardinal importance' that it had found that the 1977 Treaty was still in force and governed the relationship between the parties, although it acknowledged that it could not overlook the factual situation – or the practical possibilities or impossibilities to which

⁸² *Ibid.*, para. 85.

⁸³ *Case Concerning the Territorial Jurisdiction of the International Commission of the River Oder*, Judgment No. 16, PCIJ (1929) Ser. A No. 23, 27.

⁸⁴ *Case Concerning the Gabčíkovo–Nagymaros Project* (1997) ICJ Reports 7, para. 85. ⁸⁵ *Ibid.*, para. 115.

⁸⁶ *Ibid.*, para. 112. ⁸⁷ *Ibid.* ⁸⁸ *Ibid.*, para. 113. ⁸⁹ *Ibid.*

it gave rise – in deciding on the legal requirements for the future conduct of the parties.⁹⁰ In light of the course of events, the ICJ considered that decisions on the future implementation of the Gabčíkovo–Nagymaros project were, first and foremost, for the parties themselves.⁹¹ The ICJ stressed that in future negotiations between the parties the project’s impact upon, and implications for, the environment, should be a key issue. Evaluation of the environmental risks would need to be undertaken, taking into account current standards.⁹² The ICJ was also mindful of the need for vigilance and prevention in the field of environmental protection ‘on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage’.⁹³ The ICJ referred to the concept of ‘sustainable development’, remarking that, for the purposes of the present case, this meant that:

the Parties should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river.⁹⁴

The ICJ instructed the parties ‘to find an agreed solution that takes account of the objectives of the Treaty, which must be pursued in a joint and integrated way, as well as the norms of international environmental law and the principles of the law of international watercourses’.⁹⁵ On the final issue of reparation for the internationally wrongful acts committed by both parties, the ICJ noted that both Hungary and Slovakia were under an obligation to pay compensation to the other.⁹⁶ However, the ICJ declined to indicate the quantum of damages payable, instead resolving the issue as follows:

Slovakia is . . . entitled to compensation for the damage suffered by Czechoslovakia as well as by itself as a result of Hungary’s decision to suspend and subsequently abandon the works at Nagymaros and Dunakiliti, as those actions caused the postponement of the putting into operation of the Gabčíkovo power plant, and changes in its mode of operation once in service.

Hungary is entitled to compensation for the damage sustained as a result of the diversion of the Danube, since Czechoslovakia, by putting into operation Variant C, and Slovakia, in maintaining it in service, deprived Hungary of its rightful part in the shared water resources, and exploited those resources essentially for their own benefit.

Given the fact, however, that there have been intersecting wrongs by both Parties, the Court wishes to observe that the issue of compensation could satisfactorily be resolved in the framework of an overall settlement if each of the Parties were to renounce or cancel all financial claims and counter-claims.⁹⁷

Overall, the ICJ’s judgment affirmed the importance of environmental considerations in addressing the rights and obligations of riparian states in an international watercourse. In assessing the implications of the judgment, it must be borne in mind that the ICJ was largely concerned with the application of the law as it was in 1989 and in 1992, when the relevant acts occurred. It is perhaps for this reason that the ICJ was reluctant to go too far, for example in

⁹⁰ *Ibid.*, para. 132.

⁹¹ *Ibid.*, paras. 133–7.

⁹² *Ibid.*, para. 140.

⁹³ *Ibid.*

⁹⁴ *Ibid.*

⁹⁵ *Ibid.*, para. 141.

⁹⁶ *Ibid.*, para. 152.

⁹⁷ *Ibid.*, paras. 152–3.

recognising or applying a precautionary approach. But, significantly, the ICJ made an important contribution to the development of international environmental law: it recognised the concept of 'ecological necessity' and the need for environmental risks to be assessed on a continuous basis, in light of current environmental standards. That said, the ICJ shied away from offering more detailed guidance on broader questions, such as the relationship between equitable utilisation and the obligation to prevent environmental damage, and the principles to be applied in valuing environmental damage.

The Case Concerning Pulp Mills on the River Uruguay⁹⁸

This dispute arose under the Statute of the River Uruguay (1975 Statute),⁹⁹ which was signed between Argentina and Uruguay to implement Article 7 of the 1961 treaty that establishes the boundary between the two countries on the River Uruguay. The case concerned Uruguay's authorisation of two pulp mills on the river, one near Fray Bentos – the M'Bopicuá (MBC) mill – and another several kilometres downstream – the Botnia mill – both located close to the Argentine city of Gualaguaychú. Argentina considered that Uruguay was in breach of the 1975 Statute, and referred the matter to the Administrative Commission of the River Uruguay (CARU) created under the 1975 Statute. Unable, however, to resolve the dispute before the CARU, in 2006 Argentina referred the dispute to the ICJ in accordance with Article 60 of the 1975 Statute.

In its application to the ICJ, Argentina claimed that Uruguay had breached substantive obligations under the 1975 Statute to prevent pollution and prescribe measures in accordance with applicable international standards, and procedural obligations relating to prior notification and cooperation and the obligation to prepare an environmental impact assessment.¹⁰⁰ Argentina sought declarations that Uruguay cease to act in breach of its obligations under the 1975 Statute, and provide reparation for injury. Argentina also sought injunctive relief from the Court, namely the suspension of the construction of the pulp mills.¹⁰¹ This request was rejected by the Court in July 2006, on the ground that Argentina had not demonstrated that the construction would cause harm to the river such as to meet the requirement of urgency necessary to justify provisional measures.¹⁰²

In September 2006, the construction of the MBC mill was abandoned, leaving just the Botnia mill, which went into operation in 2008, producing a million tonnes of pulp a year. Uruguay argued that the river was able to assimilate this volume of pollution, being one of the largest rivers in the world. Argentina, on the other hand, argued that its scientific evidence pointed to a

⁹⁸ *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (2010) ICJ Reports 18. For commentary on the decision, see O. McIntyre, 'The Proceduralisation and Growing Maturity of International Environmental Law: Case Concerning Pulp Mills on the River Uruguay (*Argentina v. Uruguay*)', International Court of Justice, 20 April 2010', 22(3) *Journal of Environmental Law* 475 (2010); C. R. Payne, 'Pulp Mills on the River Uruguay (*Argentina v. Uruguay*)', 105 *American Journal of International Law* 94 (2011).

⁹⁹ Statute of the River Uruguay, Salto, 26 February 1975, 1295 UNTS 340. For further details of the 1975 Statute, see p. 352.

¹⁰⁰ Application Instituting Proceedings filed in the Registry of the Court on 4 May 2006, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, p. 19, para. 24.

¹⁰¹ *Demande en Indication de Mesures Conservatoires Présenté par le Gouvernement de la République Argentine*, 4 May 2006.

¹⁰² *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Provisional Measures, Order of 13 July 2006 (2006) ICJ Reports 113.

different conclusion. As described in Chapter 15, the Court found that Uruguay had violated procedural obligations to inform, notify and negotiate with Argentina; however, since those obligations only extended until the end of the negotiation period provided by Statute, thereafter Uruguay was free to proceed to construction and operation of the mill.¹⁰³

Argentina argued that by proceeding to authorise the pulp mills Uruguay had violated the substantive obligations of the 1975 Statute, in particular Articles 36 and 41. Article 36 directed the parties to 'co-ordinate, through the [River] Commission, the necessary measures to avoid any change in the ecological balance and to control pests and other harmful factors in the river and the areas affected by it'; Article 41 obliged the parties, *inter alia*, to 'protect and preserve the aquatic environment and, in particular, to prevent its pollution'.¹⁰⁴

In addressing the substantive obligations, the Court rejected Argentina's argument that the procedural and substantive obligations laid out in the 1975 Statute were indivisible,¹⁰⁵ noting that, although there was a 'functional' connection between procedural and substantive obligations, the Statute did not 'indicate that a party may fulfill its substantive obligations by complying solely with its procedural obligations, nor that a breach of procedural obligations automatically entails the breach of substantive ones'.¹⁰⁶ The Court also addressed issues of evidence and proof, noting that 'a precautionary approach may be relevant in the interpretation and application of the . . . Statute' but did not operate to reverse the burden of proof, which fell on the party making the allegation of violation.¹⁰⁷ The Court ruled that Article 1 merely set out the purposes of the 1975 Statute, and as such informed the interpretation of the substantive obligations, but 'does not by itself lay down specific rights and obligations' with regard to the attainment of optimum and rational utilisation, which 'requires a balance between the Parties' rights and needs to use the river for economic and commercial activities on the one hand, and the obligation to protect it from any damage to the environment that may be caused by such activities, on the other'.¹⁰⁸

As regards Article 36, the Court concluded that its purpose was 'to prevent any transboundary pollution liable to change the ecological balance of the river by coordinating, through CARU, the adoption of the necessary measures'; in this way it imposed an obligation on both states 'to take positive steps to avoid changes in the ecological balance', including the adoption of a regulatory framework, as had been done through CARU, and in 'the observance as well as enforcement by both Parties of the measures adopted'.¹⁰⁹ This imposed an 'obligation of conduct', and both parties were required 'to exercise due diligence in acting through [CARU] for the necessary measures to preserve the ecological balance of the river'. While the obligation was of crucial importance to preserve ecological balance, Argentina had not demonstrated that Uruguay had refused to engage in coordination within the Commission and there was therefore no breach of Article 36.¹¹⁰

The Court also found no violation of Article 41. It began with a series of general observations that indicate its approach to the interpretation and application of environmental protection provisions. First, it noted that the provision drew a distinction between the regulatory functions

¹⁰³ Judgment, para. 157; Chapter 15, pp. 694–7.

¹⁰⁴ Art. 40 defines pollution as 'the direct or indirect introduction by man into the aquatic environment of substances or energy which have harmful effects'.

¹⁰⁵ Judgment, para. 71. ¹⁰⁶ *Ibid.*, para. 78. ¹⁰⁷ *Ibid.*, para. 164. ¹⁰⁸ *Ibid.*, paras. 173 and 175.

¹⁰⁹ *Ibid.*, para. 185. ¹¹⁰ *Ibid.*, paras. 187–9.

of CARU and the parties' obligation to adopt rules and measures individually to 'protect and preserve the aquatic environment and, in particular, to prevent its pollution'. Second, Article 41 indicated that each parties' own rules must be 'in accordance with applicable international agreements' and 'in keeping, where relevant, with the guidelines and recommendations of international technical bodies'. Third, the Article 41 obligation imposed a duty 'to act with due diligence in respect of all activities which take place under the jurisdiction and control of each party', entailing the adoption of appropriate rules and measures and 'a certain level of vigilance in their enforcement', such as monitoring. Accordingly, a party's responsibility would be engaged only 'if it was shown that it had failed to act diligently' and failed to take 'all appropriate measures to enforce its relevant regulations on a public or private operator under its jurisdiction'.¹¹¹ And, fourth, the Court noted that the scope of the obligation to prevent pollution fell to be determined by reference to the definition of pollution in Article 40 of the 1975 Statute, including the 'harmful effects' that were to be assessed by reference to the CARU Digest that set standards for harmful levels of pollutants, expressing 'the will of the Parties and their interpretation of the provisions of the 1975 Statute'.¹¹²

The Court ruled that Uruguay had not breached its obligations under Article 41 because Argentina had not provided 'conclusive evidence' showing that Uruguay had 'not acted with the requisite degree of due diligence or that the discharges of effluent from the [Botnia] mill have had deleterious effects or caused harm to living resources or to the quality of the water or the ecological balance of the river since it started its operations in November 2007'.¹¹³ In reaching this conclusion, the Court found that Uruguay had acted with due diligence in carrying out an environmental impact assessment,¹¹⁴ taking a limited view of what was required under general international law by way of an EIA. It rejected Argentina's argument that no proper assessment of possible sites was carried out prior to the determination of the final site, as well as Argentina's claim that Uruguay had failed to take into account 'the receiving capacity and sensitivity of the waters of the river', and its ability to cope with the level of polluting discharges from the Botnia plant.¹¹⁵ In particular, Argentina had 'not established' that effluent discharges exceeded limits set by CARU.¹¹⁶ The Court also found that Uruguay had consulted appropriately with the affected populations;¹¹⁷ that there was no evidence to support Argentina's claim that the Botnia mill was 'not BAT-compliant in terms of the discharges of effluent for each tonne of pulp produced',¹¹⁸ and that the mill's discharges generally met CARU and Uruguayan standards and, where on occasion they did not do so, the Court was not in a position to conclude that Uruguay had violated Article 41(a) 'in the absence of convincing evidence that this [was] not an isolated episode but rather a more enduring problem'.¹¹⁹ As regards the presence of particular pollutants, the Court rejected all of Argentina's allegations: it was 'unproven' that post-operational averages of dissolved oxygen were below CARU minimum standards,¹²⁰ 'so far' Uruguay had complied with its own standard for total phosphorus in effluent discharge (in the absence of any CARU standards);¹²¹ the fact that

¹¹¹ *Ibid.*, paras. 195–7.

¹¹² *Ibid.*, paras. 198–9; the Digest defines 'harmful effects' as 'any alteration of the water quality that prevents or hinders any legitimate use of the water, that causes deleterious effects or harm to living resources, risks to human health, or a threat to water activities including fishing or reduction of recreational activities' (Title I, Chapter I, Section 2, Art. 1(c) of the Digest (E3)).

¹¹³ Judgment, para. 265.

¹¹⁴ See Chapter 14, p. 678.

¹¹⁵ Judgment, paras. 210–14.

¹¹⁶ *Ibid.*, para. 214.

¹¹⁷ *Ibid.*, paras. 215–19.

¹¹⁸ *Ibid.*, para. 225.

¹¹⁹ *Ibid.*, para. 228.

¹²⁰ *Ibid.*, para. 239.

¹²¹ *Ibid.*, para. 243.

levels of concentrations of total phosphorus in the river exceeded the limits established by Uruguayan legislation did not constitute a violation of Article 41(a) 'in view of the river's relatively high total phosphorus content prior to the commissioning of the plant, and taking into account the action being taken by Uruguay by way of compensation';¹²² and it was not established that a serious algal bloom episode that occurred on 4 February 2009 'was caused by the nutrient discharges from the [Botnia] mill'.¹²³ The Court further concluded that: there was 'insufficient evidence' to attribute to the Botnia mill the allegedly increased level of concentrations of phenolic substances;¹²⁴ Argentina had not 'adduced clear evidence' establishing a link between the presence of nonylphenols and the operation of the Botnia mill;¹²⁵ there was 'no clear evidence' to link increases in the presence of dioxins and furans in the river to the operation of the Botnia mill;¹²⁶ there was not 'sufficient evidence' to show that the mill had caused harm to flora and fauna, and no clear evidence that substances with harmful effects had been introduced into the aquatic environment of the river through the mill's emissions into the air.¹²⁷

These evidentiary findings were criticised by Judges Simma and Al-Khasawneh in a strongly worded joint dissenting opinion. They concluded that, faced with the results of a deficient method of scientific fact-finding, they were not in a position to agree that Uruguay 'has not breached its substantive obligations under Articles 35, 36 and 41 of the 1975 Statute of the River Uruguay'.¹²⁸ They concluded that the Court had evaluated the scientific evidence in a manner that was 'flawed methodologically' and that the Court had not done what was necessary 'to arrive at a basis for the application of the law to the facts as scientifically certain as is possible in a judicial proceeding'.¹²⁹ They considered that on its own the Court was 'not in a position adequately to assess and weigh complex scientific evidence of the type presented by the Parties', and that a court of justice cannot assess, without the assistance of experts, complex and competing scientific claims as to 'whether two or three-dimensional modelling is the best or even appropriate practice in evaluating the hydrodynamics of a river', or 'the effects of the breakdown of nonylphenolethoxylates', or 'the possible chain of causation which can lead to an algal bloom'. On their view, which was shared by Judge Ad Hoc Vinuesa in his dissenting opinion, 'the task of a court of justice is not to give a scientific assessment of what has happened, but to evaluate the claims of parties before it and whether such claims are sufficiently well-founded so as to constitute evidence of a breach of a legal obligation',¹³⁰ and this required the appointment by the Court of one or more experts under Article 50 of its Rules. This view was not shared by the majority, as reflected in Judge Keith's view, expressed in a separate opinion, that the resolution of the scientific and technical matters in the case was 'relatively straightforward'.¹³¹ Also with the majority, Judge Yusuf nevertheless expressed concerns about 'the manner in which the Court decided to handle the abundant factual material presented by the Parties', stating that the Court was not in a position to compare adequately, for example, the hydrodynamic data regarding the flow of the river, because each of the parties collected their data 'from monitoring at different stations, at different depths, and on different dates'.¹³² According to Judge Yusuf, the Article 50 mechanism would have enabled the Court to deal with only one set of scientific data, rather than try to evaluate the relative merits, relevancy, accuracy

¹²² *Ibid.*, para. 247. ¹²³ *Ibid.*, para. 250. ¹²⁴ *Ibid.*, para. 254. ¹²⁵ *Ibid.*, para. 257. ¹²⁶ *Ibid.*, para. 259.

¹²⁷ *Ibid.*, paras. 262 and 264. ¹²⁸ Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, para. 2.

¹²⁹ *Ibid.* ¹³⁰ *Ibid.*, para. 4; Dissenting Opinion of Judge Ad Hoc Vinuesa, para. 95.

¹³¹ Separate Opinion of Judge Keith, para. 11. ¹³² Declaration of Judge Yusuf, para. 3.

and probative value of two sets of conflicting evidence, and would not have deprived the Court of its judicial function: ‘Thus, although experts may assist the Court to develop a finer grasp of the scientific and technical details of factual issues arising in the case, it always remains the ultimate responsibility of the judge to decide on the relevance and significance of those facts to the adjudication of the dispute.’¹³³

These views reflect a recognition that the judicial assessment of complex technical and scientific matters of the kind that arise in many international environmental cases can pose significant challenges. Thus, while the *Pulp Mills* case may be said to reflect a certain coming of age for environmental arguments before the ICJ, it may allow states to feel emboldened in avoiding cooperative obligations in disputes over the environmental impacts of certain projects for international watercourses, in the sense that the consequences of the violation of procedural obligations will be negligible.

Indus Waters Kishenganga Arbitration

The Indus River flows for some 1,800 miles through Pakistan and India and has been a source of tension between the two countries ever since partition in 1947. Following mediation facilitated by the World Bank, in 1960 India and Pakistan concluded the Indus Waters Treaty,¹³⁴ which aims to apportion equitably water resources of the Indus Basin, giving the ‘Eastern Rivers’ (the Ravi, Sutlej and Beas) to India, and the ‘Western Rivers’ (the Indus, Jehlum and Chenab) to Pakistan. Subject to certain specified exceptions, the parties must refrain from interfering with the rivers apportioned to the other.¹³⁵ This agreement has provided a rare source of cooperation for two countries, although it is questionable whether the Treaty itself will resolve further conflicts.

In 2010, a first arbitration under the Indus Waters Treaty was initiated by Pakistan over India’s construction of the Kishenganga Hydro-Electric Project (KHEP), which is designed to divert waters from a dam site on the Kishenganga/Neelum River (a tributary of the Jehlum) to another river of the Indus system.¹³⁶ A seven-member Court of Arbitration was established to determine the dispute under the auspices of the Permanent Court of Arbitration. The Court issued an Order on Interim Measures in September 2011, a Partial Award in February 2013 and a Final Award in December 2013.

Pakistan claimed the KHEP would divert water controlled by Pakistan. It requested the Court to determine whether this diversion breached India’s obligations under the Treaty and also whether India was permitted to deplete or bring the reservoir level of the KHEP below the Dead Storage Level (DSL) in any circumstances except in the case of an unforeseen emergency.

¹³³ *Ibid.*, para. 12.

¹³⁴ Indus Waters Treaty, Karachi, 19 September 1960, 419 UNTS 126. See further, S. Rai and S. Patnik, ‘Water Disputes in South Asia’, in D. K. Vajpeyi (ed.), *Water Resource Conflicts and International Security* (New York, NY: Lexington Books, 2011), 103.

¹³⁵ Arts. II(2)–(4) and III(2).

¹³⁶ The dispute settlement procedure under the Treaty was invoked for the first time by Pakistan in 2005. The dispute concerned a hydroelectric project being constructed on the Chenab River upstream from the Pakistan border, and the question of whether it complied with the Treaty. The dispute was resolved by a neutral expert, and the dam was eventually completed. See further, S. M. A. Salman, ‘The Baglihar Difference and Its Resolution Process – A Triumph for the Indus Waters Treaty?’, 10 *Water Policy* 105 (2008). Another dispute, which remains unresolved, concerns whether construction of a barrage at the mouth of Wullar Lake is for navigational or irrigation purposes.

In its Interim Measures Order, the Court found that interim measures were warranted to 'avoid prejudice to the final solution' of the dispute on the basis that Pakistan had presented a plausible case that India's planned installations on the Kishenganga/Neelum might be found to violate the Treaty. It issued a limited Order for Interim Measures that allowed India to proceed with all works on the KHEP at its own risk, other than 'the construction of any permanent works on or above the Kishenganga/Neelum riverbed at the Gurez site that may inhibit the restoration of the full flow of that river to its natural channel'.¹³⁷

In its Partial Award of February 2013, the Court found, however, that India was permitted under the Treaty to divert water from the Kishenganga/Neelum River for the purposes of the KHEP. The Court's conclusion was based primarily on paragraph 15(iii) of Annexure D of the Treaty, which governs the design and operation of new run-of-the-river plants. Paragraph 15(iii) provides:

Subject to the provisions of Paragraph 17, the works connected with a Plant shall be so operated that (a) the volume of water received in the river upstream of the Plant, during any period of seven consecutive days, shall be delivered into the river below the Plant during the same seven-day period, and (b) in any one period of 24 hours within that seven-day period, the volume delivered into the river below the Plant shall be not less than 30%, and not more than 130%, of the volume received in the river above the Plant during the same 24-hour period: Provided however that:

[. . .]

- (iii) where a Plant is located on a Tributary of The Jhelum on which Pakistan has any Agricultural use or hydro-electric use, the water released below the Plant may be delivered, if necessary, into another Tributary but only to the extent that the then existing Agricultural Use or hydro-electric use by Pakistan on the former Tributary would not be adversely affected.

The Court found that paragraph 15(iii) permitted the diversion, which was 'necessary' for the purpose of the generation of hydroelectric power through the KHEP.¹³⁸ While the Court emphasised that its conclusion 'should not be taken to mean that potential downstream harm is irrelevant to the analysis',¹³⁹ it nevertheless found that Pakistan had no 'then existing' agricultural or hydroelectric use of the Kishenganga/Neelum River that was adversely affected, and India's right to divert the waters of the Kishenganga/Neelum for power generation by the KHEP was protected under the Treaty.¹⁴⁰

The Court found, however, that India's right to divert the waters of the Kishenganga/Neelum was not absolute. Rather, it was subject to the constraints specified by the Treaty under paragraph 15(iii) and by relevant principles of customary international law to be applied by the Court pursuant to Paragraph 29 of Annexure G when interpreting the Treaty.¹⁴¹ Both of these limitations, the Court held, required India to operate the KHEP in a manner that ensured a minimum flow of water in the riverbed of the Kishenganga/Neelum downstream of the KHEP. Pointing to the *Trail Smelter*/Principle 21 duty, it declared:

¹³⁷ Para. 152.

¹³⁸ Paras. 390, 398.

¹³⁹ Para. 399.

¹⁴⁰ Para. 435.

¹⁴¹ Para. 455.

There is no doubt that States are required under contemporary customary international law to take environmental protection into consideration when planning and developing projects that may cause injury to a bordering State. Since the time of *Trail Smelter*, a series of international conventions, declarations, and judicial and arbitral decisions have addressed the need to manage natural resources in a sustainable manner. In particular, the International Court of Justice expounded upon the principle of 'sustainable development' in *Gabčíkovo–Nagymaros*, referring to the 'need to reconcile economic development with protection of the environment'. Applied to large-scale construction projects, the principle of sustainable development translates, as the International Court of Justice recently put it in *Pulp Mills*, into 'a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource'.¹⁴²

The Court found that the parties had acknowledged that 'the maintenance of a minimum flow downstream of the KHEP is required in response to considerations of environmental protection'.¹⁴³ On the basis of the evidence before it the Court was unable to determine the quantity of water that constituted an appropriate minimum and deferred its decision on the rate of flow required to the subsequent Final Award.

The second question raised by Pakistan in the dispute related to the permissibility of sediment control techniques such as drawdown flushing to remove accumulated sediment from the reservoir of the KHEP. The Court ruled that India could not employ drawdown flushing that would entail depletion of the reservoir below Dead Storage Level. On the basis of the expert evidence it held that sluicing provided an alternative acceptable technique, at this and other sites on the Western Rivers.¹⁴⁴

In the Final Award, the Court addressed the question of the precise rate of the minimum flow to be preserved downstream of the KHEP. It characterised its task as being

to determine a minimum flow that will mitigate adverse effects to Pakistan's agricultural and hydro-electric uses throughout the operation of the KHEP, while preserving India's right to operate the KHEP and maintaining the priority it acquired from having crystallized prior to the NJHEP. At the same time, in fixing this minimum flow, the Court must give due regard, in keeping with Paragraph 29 of Annexure G, to the customary international law requirements of avoiding or mitigating trans-boundary harm and of reconciling economic development with the protection of the environment.¹⁴⁵

On the parties' assessments of the impacts of the KHEP on the downstream environment, the Court concluded there was 'no single "correct" approach to such assessments';¹⁴⁶ the differences between the parties' environmental evaluations had to be 'viewed in light of the evolving science of predicting the environmental changes that would result from altered flow conditions'.¹⁴⁷ The Court preferred the Pakistani assessment, which it saw as 'a far more extensive analysis,

¹⁴² Paras. 449–50. ¹⁴³ Para. 455. ¹⁴⁴ Para. 521. ¹⁴⁵ Final Award, para. 87.

¹⁴⁶ Para. 99 ('For any given river or project, the correct approach will depend upon the existing state of the river, the magnitude of anticipated changes, the importance of the proposed project, and the availability of time, funding, and local expertise').

¹⁴⁷ Para. 98.

attempting to capture complex interactions within the river ecosystem',¹⁴⁸ noting that such assessments were 'increasingly used by scientists and policymakers to bring a deeper understanding of ecology to bear on the management and development of river systems'.¹⁴⁹ On the basis of the Pakistani assessment, the Court concluded that 'an approach that takes exclusive account of environmental considerations would suggest an environmental flow of some 12 cumecs'.¹⁵⁰

Environmental considerations, however, were not the only factor to be taken into account by the Court, which had to balance this factor with the priority accorded in the Partial Award to India's right to operate the KHEP effectively. Accordingly, it ruled that 'India should have access to at least half of the average flow at the KHEP site during the driest months',¹⁵¹ a requirement that would be satisfied by a minimum flow of 9 cumecs, which would maintain the natural flow regime in the most severe conditions.¹⁵²

As in the Partial Award, in addition to India's priority right with respect to the use of the waters of the Kishenganga/Neelum River under the Treaty, an additional factor that the Court considered in determining the rate of minimum flow was customary international environmental law. The Court specifically distinguished the *Iron Rhine* arbitration finding that principles of international environmental law must be taken into account even when interpreting treaties concluded before the development of that body of law, holding that Annexure G, paragraph 29 of the Treaty expressly limited the extent to which the Court could have recourse to, and apply, sources of law beyond the Treaty. The Court did not:

consider it appropriate, and certainly not 'necessary', for it to adopt a precautionary approach and assume the role of policymaker in determining the balance between acceptable environmental change and other priorities, or to permit environmental considerations to override the balance of other rights and obligations expressly identified in the Treaty – in particular the entitlement of India to divert the waters of a tributary of the Jhelum. The Court's authority is more limited and extends only to mitigating significant harm.

In effect, the Court regarded the prioritisation of environmental considerations above all others would effectively negate the provisions of paragraph 15(iii) of the Treaty, a result not permitted by paragraph 29.¹⁵³

Although the Court did not consider a 'precautionary approach' appropriate in reaching its decision on the minimum rate of environmental flow, the Final Award built in the possibility of a review mechanism to take account of the inherent uncertainty in 'any attempt to predict environmental responses to changing conditions' including the fact that 'flows in the Kishenganga/Neelum may come to differ, perhaps significantly, from the historical record as a result of factors beyond the control of either Party, including climate change'.¹⁵⁴ Designing what in effect could be considered the first example of an adaptive management approach in international environmental jurisprudence,¹⁵⁵ the Court ruled

¹⁴⁸ *Ibid.* ¹⁴⁹ *Ibid.* ¹⁵⁰ Para. 104. ¹⁵¹ Para. 109. ¹⁵² Para. 115. ¹⁵³ Para. 112. ¹⁵⁴ Para. 117.

¹⁵⁵ An adaptive management approach is one that allows for adjustment of an activity over time in response to emerging data on its environmental effects. See further C. S. Holling, *Adaptive Environmental Assessment and Management* (Chichester: Wiley, 1978).

The KHEP should be completed in such a fashion as to accommodate possible future variations in the minimum flow requirement. If, beginning seven years after the diversion of the Kishenganga/Neelum through the KHEP, either Party considers that reconsideration of the Court's determination of the minimum flow is necessary, it will be entitled to seek such reconsideration through the Permanent Indus Commission and the mechanisms of the Treaty.¹⁵⁶

Even if the Court's ruling on the minimum flow to be preserved below the KHEP cannot be considered complete from an environmental perspective, several aspects of the Indus Waters arbitral rulings have the potential to contribute significantly to the further development of international environmental law with respect to freshwater resources. In particular, the Court's careful weighing of the scientific and expert evidence in the case, coupled with its awareness of the potential for changes in environmental science and environmental conditions, and the adoption of adaptive management regimes, hold out some promise as a model for judicial settlement of future transboundary river disputes.

Costa Rica v. Nicaragua Cases

In these joined cases before the ICJ, Costa Rica and Nicaragua presented arguments to the Court concerning pollution of the San Juan River through activities conducted by each country in the border area. Costa Rica's relevant claims before the Court related to Nicaragua's dredging of the San Juan River, which was alleged to be in violation of its international obligations, including under international environmental treaties such as the Ramsar Wetlands Convention.¹⁵⁷ For its part, Nicaragua's case focused on Costa Rica's major road construction works along the San Juan River, which it argued were in violation of several international obligations and carried grave environmental consequences.

Costa Rica's claims against Nicaragua in respect of alleged violations of international environmental law associated with dredging of the San Juan River fell into two categories: breach of procedural obligations to carry out an appropriate transboundary environmental impact assessment of its dredging works, and to notify, and consult with, Costa Rica regarding those works;¹⁵⁸ and breach of substantive environmental obligations not to cause transboundary harm to Costa Rica's territory. As regards the latter, the Court restated its ruling in *Pulp Mills* that 'under customary international law, "[a] State is . . . obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State".¹⁵⁹ On the evidence before it, however, the Court found no breach, rejecting Costa Rica's claim that the dredging programme had had a significant impact on the Colorado River, which receives around 90 per cent of the waters flowing through the San Juan River. The relatively small quantity of water diverted (Nicaragua's estimate – unchallenged by Costa Rica – was that the diversion of water from the Colorado River

¹⁵⁶ Para. 119. ¹⁵⁷ See further Chapter 10, pp. 420–2.

¹⁵⁸ The Court's findings in respect of these claims are discussed further in Chapter 14, pp. 676–9, and Chapter 15, pp. 694–6.

¹⁵⁹ *Costa Rica v. Nicaragua* cases, Judgment, para. 118, citing ICJ Reports 2010 (I), p. 56, para. 101 and *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion*, ICJ Reports 1996 (I), pp. 241–2, para. 29).

due to dredging of the Lower San Juan River affected less than 2 per cent of the waters flowing into the Colorado River), and Costa Rica's failure to establish a 'causal link' between flow reduction and Nicaragua's dredging programme, led the Court to conclude 'that the available evidence does not show that Nicaragua breached its obligations by engaging in dredging activities in the Lower San Juan River.'¹⁶⁰

Nicaragua's claims against Costa Rica in respect of the road construction works similarly raised procedural issues with respect to the prior assessment and notification of the road's environmental impact,¹⁶¹ and allegations of a breach of substantive obligations including the customary law obligation to prevent significant transboundary harm and treaty obligations with respect to environmental protection. The source of environmental harm from the roadworks was alleged to be excessive deposition of sediment in the river resulting from erosion. While the parties' experts differed considerably on the total volume of sediment delivered to the River as a result of the construction works, the Court found that it represented at most 2 per cent of the River's sediment load.¹⁶² This, it said, could not be considered 'significant harm', particularly taking into account the high natural variability in the River's sediment load.¹⁶³

Nicaragua submitted that there is a maximum load for sediment in the San Juan, and that *any* additional amount of sediment delivered from the road to the river was necessarily harmful.¹⁶⁴ It also sought to contend – based on the ILC's Draft Articles on the Prevention of Transboundary Harm – that any detrimental impact of the construction of the road on the San Juan River need only be susceptible of being measured to qualify as significant harm.¹⁶⁵ However, the Court firmly rejected this position as 'unfounded', holding that '[s]ediment is naturally present in the river in large quantities, and Nicaragua has not shown that the river's sediment levels are such that additional sediment eroded from the road passes a sort of critical level in terms of its detrimental effects'.¹⁶⁶ Moreover, it rejected the view that this was a situation where sediment contributed by the road exceeded maximum allowable limits, which, it said, had not been determined for the San Juan River. Accordingly, the Court was 'not convinced by Nicaragua's argument that the absolute quantity of sediment in the river due to the construction of the road caused significant harm *per se*'.¹⁶⁷

GLOBAL RULES

The body of instruments described in the previous section, together with principles developed through the case law, laid the groundwork for the negotiation and adoption of treaties of global scope. The principal global water resources treaty is the 1997 Watercourses Convention, which was based on the codification efforts of the ILC as reflected in the draft Articles on the Law of Non-Navigational Uses of International Watercourses,¹⁶⁸ and entered into force on 17 August

¹⁶⁰ Paras. 119–20. ¹⁶¹ For the Court's findings on these issues, see further Chapter 14, pp. 679–80. ¹⁶² Para. 186.

¹⁶³ Para. 194. ¹⁶⁴ Para. 188. ¹⁶⁵ Para. 190. ¹⁶⁶ Para. 192.

¹⁶⁷ *Ibid.* In addition to its arguments regarding general environmental harm, Nicaragua argued that sediment desposition posed a risk of harm to the aquatic ecosystem of the river and to water quality. These arguments were also dismissed by the Court on the basis that Nicaragua had not presented any evidence of actual harm nor identified with precision which fish species had been harmed by construction of the road (para. 211).

¹⁶⁸ 30 ILM 1575 (1991). The ILC's work began in 1971, following a request from the UN General Assembly. A first reading of a full set of draft Articles was adopted at the ILC's 43rd Session in 1991, and a revised set of draft Articles was adopted in 1994. The tension between the interests of upstream and downstream states was tangible during the course of the ILC's efforts, and in the diplomatic negotiations leading to the adoption of the 1997 Convention.

2014. The other water resources treaty of global scope is the 1992 Watercourses Convention. While participation in this latter treaty was initially limited to states in the UNECE region, the entry into force of amendments in February 2013 has made the treaty open to accession by states outside the region, although no such states have as yet joined the Convention.

1997 Watercourses Convention

The 1997 Watercourses Convention applies to uses of international watercourses and their waters for purposes other than navigation, and encourages watercourse states to enter into watercourse agreements.¹⁶⁹ It establishes a framework of general principles to guide the behaviour of states, and its general approach has been noted with apparent approval by the ICJ.¹⁷⁰

The Convention comprises an introductory section, and five operational parts. Part II proposes general principles. The Convention is without prejudice to rights and obligations arising from agreements already in force,¹⁷¹ and permits states to enter into new agreements which 'apply and adjust' its provisions 'to the characteristics and uses of a particular international watercourse'.¹⁷² Article 5 of the Convention is of central importance: it provides that watercourse states 'shall . . . utilise an international watercourse in an equitable and reasonable manner', which requires the optimal and sustainable utilisation of the watercourse and its benefits 'consistent with adequate protection of the watercourse'.¹⁷³ The right to equitable utilisation is balanced by the requirement of Article 7 (together with the obligation to prevent pollution, as required by Article 21), which commits watercourse states to 'take all appropriate measures to prevent the causing of significant harm to other watercourse States'. Where significant harm is nevertheless caused, the responsible state must take all appropriate measures, in consultation with the affected state, to eliminate or mitigate the harm and, 'where appropriate, to discuss the question of compensation'.¹⁷⁴

Other principles require states to cooperate and regularly exchange data and information,¹⁷⁵ and deal with the relationship between different kinds of uses of a watercourse.¹⁷⁶ Part III is concerned with planned measures that may have an effect on an international watercourse. It establishes a phased procedure comprising information exchange and consultation, notification, and a waiting period of six months to allow for a reply to the notification, during which time the notifying state 'shall not implement or permit the implementation of the planned measures without the consent of the notified state'.¹⁷⁷ The Convention envisages a reply to notification, consultations and negotiations, and procedures to be followed in the absence of a notification or a reply, or where urgent implementation of a particular measure is required.¹⁷⁸

¹⁶⁹ Arts. 1(1), 3 and 4. 'Watercourse' is defined as a 'system of surface and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus' (Art. 2(a)). 'International watercourse' means 'a watercourse, parts of which are situated in different States' (Art. 2(b)).

¹⁷⁰ See n. 103. ¹⁷¹ Art. 3(1). ¹⁷² Art. 3(3).

¹⁷³ Art. 5. Art. 6 identifies a non-exhaustive list of factors and circumstances which are to be taken into account to ensure an equitable and reasonable utilisation, including: (a) geographic and other factors of a natural character; (b) social and economic needs; (c) population; (d) effects on uses in another watercourse state; (e) existing and potential uses; (f) conservation of water resources; and (g) availability of alternatives. On its customary status, see Separate Opinion of Judge Kooijmans in the *Kasikili/Sedudu* case (see n. 22).

¹⁷⁴ Art. 7(1) and (2). ¹⁷⁵ Art. 9.

¹⁷⁶ Art. 10. It is stated that, in the absence of agreement or custom to the contrary, 'no use of an international watercourse enjoys inherent priority over other uses' (Art. 10(1)).

¹⁷⁷ Arts. 11–14. ¹⁷⁸ Arts. 15–19.

Part IV deals specifically with the protection, preservation and management of ecosystems, which watercourse states are under an obligation, jointly or individually, to protect and preserve.¹⁷⁹ Article 21 provides that pollution which may cause 'significant' harm to other watercourse states or their environment is to be prevented, reduced and controlled, and states should consult among themselves to establish lists of substances that should be prohibited, limited, investigated or monitored.¹⁸⁰ New or alien species which may have detrimental effects on the ecosystem resulting in significant harm to other watercourse states should not be introduced,¹⁸¹ and watercourse states are required to take all measures necessary to protect and preserve the marine environment, taking into account generally accepted international rules and standards.¹⁸² Watercourse states are required, at the request of any of them, to enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.¹⁸³ They must also cooperate, where appropriate, in 'response to needs and opportunities for regulation of the flow of the waters of an international watercourse' through the use of hydraulic works, and within their own territories, and must employ their best efforts to maintain and protect installations, facilities and other works related to an international watercourse.¹⁸⁴

Part V deals with harmful conditions and emergency situations, and Part VI establishes miscellaneous provisions on, inter alia, armed conflict, indirect contacts between watercourse states, confidentiality of certain data, and non-discrimination.¹⁸⁵ Part VI also contains a dispute settlement provision that directs parties to seek settlement of any dispute concerning the Convention initially by way of negotiation, mediation, conciliation or submission of the dispute to arbitration or to the ICJ with the agreement of both parties.¹⁸⁶ Under Article 33(10), parties may elect, when ratifying, accepting, approving or acceding to the Convention, or at any time thereafter, to submit a written declaration recognising the jurisdiction of the ICJ or an arbitral tribunal constituted in accordance with the Convention's Annex as 'compulsory *ipso facto* and without special agreement in relation to any party accepting the same obligation'.¹⁸⁷ Alternatively, if the conditions in Article 33(10) are not met and the dispute is not resolved within six months of the initial request for negotiations, the dispute can be submitted, at the option of either of the parties, to an impartial fact-finding commission.¹⁸⁸ The parties are to provide the commission with such information as it may require and must permit members of the commission to have access to the state's territory for the purpose of inspecting facilities, plant or equipment, construction works or any natural feature relevant for the purpose of the commission's inquiry.¹⁸⁹ The commission reports back to the parties and may make recommendations designed to secure 'an equitable solution of the dispute', which the parties are required to consider in good faith.¹⁹⁰

The Convention, and its entry into force, mark an important development by stating rules of general application which are capable of global application. It provides an important starting point, and reflects minimum international standards below which states may not fall, indicating the basis upon which states can further their efforts to achieve cooperative arrangements with

¹⁷⁹ Art. 20.

¹⁸⁰ Art. 21(2) and (3). 'Pollution' is defined broadly as 'any detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct' (Art. 21(1)).

¹⁸¹ Art. 22. ¹⁸² Art. 23. ¹⁸³ Art. 24. ¹⁸⁴ Arts. 25 and 26. ¹⁸⁵ Arts. 29–32. ¹⁸⁶ Art. 33(2).

¹⁸⁷ Art. 33(10). ¹⁸⁸ Art. 33(4)–(6). ¹⁸⁹ Art. 33(7). ¹⁹⁰ Art. 33(8).

their neighbours in the use of shared freshwater resources. It remains to be seen how practice and jurisprudence establish the balance between the right to equitable utilisation and the obligation not to cause significant harm, which will necessarily turn on a case-by-case approach.

1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes

The 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992 Watercourses Convention), adopted under the auspices of the UNECE,¹⁹¹ reflected a move towards rules of general applicability to all transboundary waters in the territories of the parties, as well as transboundary waters between parties and non-parties.¹⁹² The 1992 Watercourses Convention draws heavily on the 1980 UNECE Declaration of Policy on Prevention and Control of Water Pollution (Including Transboundary Pollution), which called for a range of new approaches to the protective regulation of watercourses, including standardisation of water quality, the use of legal and administrative measures and suitable economic incentives, and the adoption as far as possible of the general principle that 'the direct or indirect costs attributable to pollution should be borne by the polluter'.¹⁹³ Under the 1992 Convention, the parties accept a general obligation to take all appropriate measures to prevent, control and reduce any transboundary impact. They commit to preventing pollution of waters which causes or is likely to cause transboundary impact, to use transboundary waters in an ecologically sound and rational, and reasonable and equitable way, and to ensure conservation and restoration of ecosystems.¹⁹⁴ The Convention encourages the adoption of preventive measures at source, prohibits the transfer of pollution to other parts of the environment, and calls for measures to be guided by the application of the precautionary and polluter pays principles.¹⁹⁵ The Convention does not preclude other bilateral and multilateral agreements and allows parties to adopt and implement more stringent measures than those set out in the Convention.¹⁹⁶

In requiring measures for the prevention, control and reduction of transboundary impact, the Convention identifies a range of options, including: the use of low- and non-waste technologies; biological or equivalent treatment of municipal wastewater; and a reduction of nutrient inputs and hazardous substances from industrial, municipal and other sources.¹⁹⁷ These approaches may be elaborated in amendments or protocols to the Convention.¹⁹⁸ The Convention supports a

¹⁹¹ Helsinki, 17 March 1992, in force 6 October 1996, 31 ILM 1312 (1992); forty-one states are party. See also the earlier related instruments adopted by the UNECE: Declaration of Policy on Water Pollution Control, 29 April 1966, ECE/RES/10(XXI); Decision on Body on Water Resources and Water Pollution Control Problems, 2 May 1968, ECE/DEC/E(XXIII); Decision on International Co-operation on Shared Water Resources, 2 April 1982, ECE/DEC/D(XXXVII); Declaration of Policy on the Rational Use of Water, 14 April 1984, ECE/DEC/C(XXXIX); Decision on Co-operation in the Field of Transboundary Waters, 26 April 1986, ECE/DEC/B(41); Decision on Principles on Co-operation in the Field of Transboundary Waters, 10 April 1987, ECE/DEC/I(42); Charter on Groundwater Management, 21 April 1989, ECE/DEC/E(44). See generally A. Tanzi, 'Regional Integration and the Protection of the Environment: The UNECE Process on Water Law as a Model for the Global Dimension', in T. Scovazzi (ed.), *The Protection of the Environment in a Context of Regional Economic Integration* (Milan: Giuffrè, 2001), 347.

¹⁹² 'Transboundary waters' are defined as 'any surface or ground waters which mark, cross or are located on boundaries between two or more States' (Art. 1(1)).

¹⁹³ ECE/DEC/B(XXXV), E/1980/28, 23 April 1980, paras. 4, 5 and 11.

¹⁹⁴ Art. 2(1) and (2). 'Transboundary impact' is defined as 'any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by human activity' (Art. 1(2)).

¹⁹⁵ Art. 2(3)-(5). ¹⁹⁶ Art. 2(6) and (8). ¹⁹⁷ Art. 3(1)(a), (e), (f) and (g). ¹⁹⁸ See p. 365.

standard based upon 'best environmental practices', guidelines for which are set out in Annex II to the Convention.¹⁹⁹ The Convention calls for: the prior licensing and subsequent monitoring of wastewater discharges (with limits to be based on best available technology for discharges of hazardous substances); stricter requirements (including prohibition) when the ecosystem so requires; environmental impact assessment; and sustainable water resources management including an ecosystems approach.²⁰⁰

The Convention signals efforts to regulate directly particular industries and activities, requiring each party to set limits for discharges for specific industries from which hazardous substances derive, based on 'best available technology'.²⁰¹ The guidelines in Annex III require parties to develop general water quality objectives and criteria,²⁰² and to provide for monitoring, research and development, the exchange of information,²⁰³ and international efforts to elaborate rules on responsibility and liability.²⁰⁴

Part II of the Convention includes provisions for riparian parties, and goes some way towards codifying the rules as established by the treaties and arbitral awards identified earlier. Bilateral and multilateral cooperation is to focus on the development or adaptation of treaties in conformity with the basic principles of the Convention, including the establishment of joint bodies to deal with specified catchment areas.²⁰⁵ Riparian parties are also encouraged to cooperate through consultations, joint monitoring and assessment, and common research and development.²⁰⁶ Exchange of information includes facilitating the exchange of best available technology and, in the event of a critical situation that may have a transboundary impact, riparian parties must inform each other 'without delay'.²⁰⁷ The Convention also requires warning and alarm systems and the provision of mutual assistance between parties.²⁰⁸ According to the provisions on public information, the parties must make available to the public, at all times and at reasonable cost, relevant information including water quality objectives, permits and their conditions, and the results of monitoring and assessment.²⁰⁹ The implementation of the Convention is reviewed by Meetings of the Parties held at least every three years, with the assistance of a secretariat provided by UNECE.²¹⁰

¹⁹⁹ Under Annex II, the measures to be considered in developing 'best environmental practices' include: the provision of information to the public and users; codes of practice covering the whole of the product's life; product labels; recycling, recovery and reuse; economic instruments; and licensing. The choice of particular measures should take into account the environmental hazard of the product (including production, use and disposal), substitute processes or substances, and scale of use.

²⁰⁰ Art. 3(1)(b), (c), (d), (h) and (i). Annex I defines 'best available technology' as 'the latest stage of development of processes, facilities or methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste'. The Annex identifies a range of factors which should be given special consideration, and states that the 'best available technology' for a particular process will change with time in the light of technological advances, economic and social factors, and changes in scientific knowledge and understanding.

²⁰¹ Art. 3(2). 'Hazardous substances' means substances which are toxic, carcinogenic, mutagenic, teratogenic or bioaccumulative, especially when they are persistent (Art. 1(6)).

²⁰² Art. 3(3).

²⁰³ Arts. 4, 5, 6 and 8. Research and development is to include 'the physical and financial assessment of damage resulting from transboundary impact' (Art. 5(h)).

²⁰⁴ Art. 7. See further Chapter 17.

²⁰⁵ Art. 9(1) and (2). The tasks of the joint bodies relate to data collection and assessment, monitoring, inventories, emissions limits, water quality objectives, action programmes, warning and alarm procedures, exchange of information and environmental impact assessments (Art. 9(2)).

²⁰⁶ Arts. 10–12. ²⁰⁷ Arts. 13 and 14. ²⁰⁸ Arts. 14 and 15. ²⁰⁹ Art. 16.

²¹⁰ Arts. 17 and 19. At the fifth session of the meeting of the parties in November 2009, a Guide to Implementing the Convention was adopted; see further www.unece.org/env/water/partnership/part.html

The parties to the 1992 Convention took further steps to give effect to its general objectives. In 1999, they adopted a Protocol on Water and Health,²¹¹ whose objective is to promote the protection of human health and well-being by improving water management, including protection of water ecosystems.²¹² The Protocol commits parties to ensure adequate supplies of wholesome drinking water, adequate sanitation (through collective systems), effective protection of drinking water supplies, safeguards for human health against water-related diseases, and effective monitoring.²¹³ These measures are to be based on an assessment of any proposed measure in respect of all its implications for human health, water resources and sustainable development, and are to be guided by the precautionary and polluter pays principles.²¹⁴ In taking their actions, parties are also to be guided by other principles and approaches, including the need to take preventive action, to ensure intergenerational equity, to adopt actions at the lowest appropriate administrative level, to make use of economic instruments, to ensure access to information and public participation, and to manage water resources in an integrated manner.²¹⁵ The Protocol also requires each party to establish and publish national and/or local targets to achieve or maintain a high level of protection against water-related diseases, and to that end to establish appropriate legal and institutional frameworks.²¹⁶ The Protocol includes provisions on the review and assessment of progress, response systems and public awareness and information,²¹⁷ and provisions on international cooperation (including on transboundary waters) and joint and coordinated international action.²¹⁸ As with other modern international agreements, provision is also made for reviewing compliance by means of 'non-confrontational, non-judicial and consultative' means.²¹⁹ In 2007, the first Meeting of the Parties to the Protocol adopted a compliance procedure, composed of nine independent experts with legal, health and water management backgrounds.²²⁰

In May 2003, the parties to the 1992 Watercourses Convention (and the 1992 Industrial Accidents Convention) adopted a Protocol on Civil Liability and Compensation for Damages Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (2003 Civil Liability Protocol).²²¹ Largely following liability concepts established by prior conventions on civil liability and principles set forth by the ILC, the 2003 Civil Liability Protocol gives individuals harmed by transboundary impacts of industrial accidents a legal claim for adequate and prompt compensation.²²² The Protocol covers physical damage to property, loss of income, costs of reinstatement and response measures.²²³ Two standards of liability are established: 'strict' liability and 'fault-based' liability. Strict liability applies to an operator of a hazardous activity for any damage arising from an accident during the course of that activity.²²⁴ Fault-based liability is available where thresholds of hazardous activity are not reached, limits of liability are exceeded or persons other than the operator are held liable.²²⁵

In 2006, the parties adopted model provisions on transboundary flood management, articulating rights and obligations of states regarding transboundary flood prevention, protection and

²¹¹ London, 17 June 1999, in force 4 August 2005. ²¹² Art. 1. ²¹³ Art. 2(2). ²¹⁴ Arts. 4(4) and 5(a) and (b).

²¹⁵ Art. 5.

²¹⁶ Art. 6. Targets are to include, inter alia, quality of drinking water, reduction of diseases, areas to be covered by collective systems, the occurrence of discharges of untreated waters, and the disposal or reuse of sludge.

²¹⁷ Arts. 7–10. ²¹⁸ Arts. 11–13. ²¹⁹ Art. 15. Art. 20 includes traditional dispute settlement provisions.

²²⁰ ECE/MP.WH/2/Add.3, EUR/06/5069385/1/Add.3, 3 July 2007, Annex to Decision I/2, *ibid.*, paras. 4–10.

²²¹ MP.WAT/2003/2-CP.TEIA/2003/4, signed 21 May 2003. It requires sixteen ratifications to come into force. However, at present the Protocol has been ratified by only one party (Hungary).

²²² Art. 1. See Chapter 16, pp. 801–2. ²²³ Art. 2(2)(d). ²²⁴ Art. 4. ²²⁵ Art. 5.

mitigation.²²⁶ First, states have an obligation to take all measures ‘to prevent, mitigate and protect against flood risks in transboundary river basins’.²²⁷ Riparian states are also required to inform each other in the event of a critical situation, and to adopt appropriate measures to prevent or mitigate adverse impacts of flooding in other parties’ territories.²²⁸ In addition, the provisions establish an obligation of long-term cooperation among riparian states within a river basin. This includes, inter alia, monitoring and data collection and exchange; basin modelling, flood plain and risk mapping; joint or coordinated planning for flood prevention, protection, preparedness, awareness-raising, ensuring public information and participation; and access to justice.²²⁹ Parties are also encouraged to incorporate environmental requirements into their flood management strategies, taking measures to maintain, improve and restore the natural function of the watercourse and water-related ecosystems.²³⁰ Furthermore, the provisions establish an obligation of prior consultation for projects with the potential to increase flood risks.²³¹

The parties to the 1992 Watercourses Convention continue to focus on increased participation, implementation and compliance. In 2003, the Convention was amended to allow accession by countries outside the UNECE region, paving the way for potentially global application.²³² The Convention parties have produced guidelines to develop and clarify international obligations and standards related to integrated water resources management (IWRM), including the 2006 Strategies for Monitoring and Assessment of Transboundary Rivers, Lakes and Groundwaters. The parties created a Task Force on Water and Climate, which has produced Guidance on Adaptation to Climate Change focusing specifically on transboundary waters. In 2012, the parties established an Implementation Committee to facilitate and support implementation and compliance. The mechanism is to be ‘simple, non-confrontational, non-adversarial, transparent, supportive and cooperative in nature, building on the distinctive collaborative spirit of the Convention’.²³³

REGIONAL RULES

Apart from the obligations of general and global application, many bilateral and regional agreements establish binding obligations for states.

Europe

The EU has adopted rules on various aspects of water quality (groundwater, drinking water, bathing water),²³⁴ and in 2000 adopted a far-reaching and innovative framework Directive on the protection of inland surface waters, transitional waters, coastal waters and groundwater.²³⁵

²²⁶ ECE/MP.WAT/2006/4, 29 August 2006. ²²⁷ Provision 1. ²²⁸ Provision 2. ²²⁹ Provision 3.

²³⁰ Provision 4. ²³¹ Provision 5. ²³² This amendment entered into force on 6 February 2013.

²³³ ECE/MP.WAT/37/Add.2, 28–30 November 2012, Annex I, para. 1(2).

²³⁴ See generally J. Lammers, ‘International and European Community Law Aspects of Pollution of International Watercourses’, in W. Lang, H. Neuhold and K. Zemanek (eds.), *Environmental Protection and International Law* (London: Graham & Trotman, 1991), 115; R. Macrory, ‘European Community Water Law’, 20 *Ecology Law Quarterly* 119 (1993); W. Howarth, ‘Water Quality and Land Use Regulation under the Water Framework Directive’, 23(2) *Pace Environmental Law Review* 351 (2006).

²³⁵ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. See also P. Chave, *The EU Water Framework Directive: An Introduction* (London: IWA, 2001).

Additionally, more than forty bilateral treaties are in force between European states that protect the quality and use of freshwaters.²³⁶ These include pollution prevention or environmental protection agreements for Lake Constance,²³⁷ Lake Geneva,²³⁸ Lake Ohrid,²³⁹ the River Danube,²⁴⁰ the River Elbe,²⁴¹ the Mosel,²⁴² the Scheldt,²⁴³ the Meuse,²⁴⁴ Luso-Spanish River Basins²⁴⁵ and for the Benelux countries generally.²⁴⁶ Other regional agreements not directly dealing with freshwater resources also have indirect benefits. The EU's 1988/2001 Large Combustion Directive and the SO₂ Protocols to the 1979 LRTAP Convention, as well as the more recent Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone, were also, to a large extent, the result of efforts to combat the acidification of lakes and other freshwater resources in Europe.²⁴⁷

Rhine

A well-developed regime exists for the River Rhine, which flows through France, Switzerland, the Netherlands and Germany, and its basin that covers 225,000 square kilometres and includes eight countries. The Rhine has been the subject of five environmental protection treaties, apart from earlier agreements on fishing and navigation.²⁴⁸ The 1963 Berne Agreement on the International Commission for the Protection of the Rhine Against Pollution (1963 Berne Pollution Agreement) established an international commission (the Rhine Commission) to research

²³⁶ For a partial list, see E. Brown Weiss, P. C. Szasz and D. B. Magraw, *International Environmental Law: Basic Documents and References* (Dobbs Ferry, NY: Transnational, 1992), 47–50. See also the listing of instruments by the International Water Project at www.internationalwaterlaw.org/documents/europe.html

²³⁷ Convention on the Protection of Lake Constance Against Pollution, Steckborn, 27 October 1960, in force 10 November 1961, 620 UNTS 191.

²³⁸ Convention Concerning the Protection of the Waters of Lake Geneva Against Pollution, Paris, 16 November 1962, in force 1 November 1963, 922 UNTS 49.

²³⁹ Agreement for the Protection and Sustainable Development of Lake Ohrid and Its Watershed, 17 June 2004, available at www.ecolex.org

²⁴⁰ See Convention on Co-operation for the Protection and Sustainable Use of the Danube River, Sofia, 29 June 1994, in force 22 October 1998. See also Declaration on Co-operation by the Danube States in Matters of Water Management of the Danube, in particular for the Protection of the Waters of the Danube Against Pollution, Bucharest, 13 December 1985, 37 ÖZRV 430 (1987); Agreement on Co-operation on Management of Water Resources in the Danube Basin, Regensburg, 1 December 1987, not yet in force, OJ L90, 5 April 1990, 20.

²⁴¹ Convention for the International Commission for the Protection of the Elbe, Magdeburg, 8 October 1990, IELMT 990:75.

²⁴² Protocol Concerning the Constitution of an International Commission for the Protection of the Mosel Against Pollution, Paris, 20 December 1961, in force 1 July 1962, 940 UNTS 211.

²⁴³ Agreement on the Protection of the River Scheldt, 26 April 1994, in force 1 March 1995, 34 ILM 859 (1995).

²⁴⁴ Agreement on the Protection of the River Meuse, 26 April 1994, in force 1 March 1995, 34 ILM 854 (1995); see Jan M. van Dunnè, *Non-Point Source River Pollution: The Case of the River Meuse* (London: Kluwer, 1996).

²⁴⁵ Convention on Co-operation for the Protection and Sustainable Use of the Waters of the Luso-Spanish River Basins, 30 November 1998, in force 17 January 2000; see 'La Convención Luso-Española sobre las Aguas de las Cuencas Hidrográficas Compartidas: Un Marco de Cooperación para la Protección de las Aguas y para el Desarrollo Sostenible', in A. Fabra and A. Barreira (eds.), *La Aplicación de la Directiva Marco del Agua en España: Retos y Oportunidades* (Madrid: Instituto Internacional de Derecho y Medio Ambiente, 2000); see also 10 *Yearbook of International Environmental Law* 236–8 (1999); A. Barreira, 'Monitoring and Evaluation of the Portuguese-Spanish Convention Appliance: Public Involvement and Participation', in Luso-American Foundation for Development, *Implementing Transboundary River Conventions* (2002).

²⁴⁶ Protocol to Establish a Tripartite Standing Committee on Polluted Waters, Brussels, 8 April 1950, in force 8 April 1950, 66 UNTS 285.

²⁴⁷ Chapter 7, pp. 270–1.

²⁴⁸ Berne Convention Establishing Uniform Regulations Concerning Fishing in the Rhine Between Constance and Basel, 9 December 1869, 9 IPE 4695.

and propose measures to protect the Rhine from pollution, and prepare arrangements for its protection.²⁴⁹ It was one of the first international institutions to be granted an environmental mandate.

The 1963 Berne Pollution Agreement was amended in 1976, and at the same time two new treaties were adopted, namely the 1976 Rhine Chemical Pollution Convention and the 1976 Rhine Chlorides Convention. The 1976 Convention for the Protection of the River Rhine Against Chemical Pollution (1976 Rhine Chemical Pollution Convention) requires parties to eliminate pollution of the surface waters of the Rhine basin by those dangerous substances listed in Annex I and to reduce pollution by those dangerous substances listed in Annex II.²⁵⁰ Parties are required, for their own use, to establish national inventories of discharges and to communicate their contents to the Rhine Commission.²⁵¹ The Convention also establishes a scheme of prior authorisation for the discharge of Annex I substances, emissions standards for maximum permissible concentrations and quantities of discharges, and national programmes for the discharge of Annex II substances.²⁵² Limit values are proposed by the Rhine Commission, which may also propose measures for the protection of underground waters, on the basis of toxicity, persistence and bioaccumulation, taking into account the 'best technical facilities available'.²⁵³ The Convention also provides for information exchange, monitoring and emergency situations.²⁵⁴ This mechanism failed in November 1986 to ensure that the Swiss authorities notified other parties of the discharge of large quantities of toxic chemicals into the Rhine following a fire at a facility owned by the Sandoz company in Basel, Switzerland. These destroyed living resources in the river ecosystem, including eels, fish and waterfowl, and the consequences of the pollution were felt in France, Germany, the Netherlands and at the point of discharge into the North Sea. Groundwater resources were contaminated, and other damage was caused to the fishing industry, to agriculture as a result of contaminated water supplies, and to tourism. In September 1987, Sandoz agreed to pay an indemnity of just under \$10 million USD to cover reimbursement of the French government's costs, compensation to individuals and groups, and to establish a programme of analysis, monitoring, restoration and emergency information.²⁵⁵

The 1976 Convention for the Protection of the Rhine River Against Pollution by Chlorides (1976 Rhine Chlorides Convention), had more specific objectives, aiming to reduce the discharge of chloride ions, and requiring France to construct a plant to reduce discharges from the Alsace potassium mines.²⁵⁶ The Convention was notable as one of the earliest to address the economic aspects of international environmental obligations, providing for the costs of the works to be borne by the parties. The Convention also provided for the circumstances in which the work should be halted and in which the parties might compensate France for damage that could not be fully compensated by the constructors of the works or by third parties.²⁵⁷ In September 1991, the five parties adopted a Protocol to the 1976 Rhine Chlorides Convention

²⁴⁹ Berne, 29 April 1963, in force 1 May 1965, 994 UNTS 3; amended Bonn, 3 December 1976, IELMT 976:91, Art. 2.

²⁵⁰ Bonn, 3 December 1976, in force 1 February 1979, 1124 UNTS 375, Art. 1(1). The Rhine is defined in Annex A. See generally A. Kiss, 'The Protection of the Rhine Against Pollution', 25 *Natural Resources Journal* 613 (1985); I. Romy, *Les Pollutions Transfrontières des Eaux: l'Exemple du Rhin* (1990).

²⁵¹ Art. 2 and Annex III. ²⁵² Arts. 3, 4 and 6(1)–(3).

²⁵³ Arts. 5(1), (2) and (5) and 7(2). Once limit values have been adopted, they are included in Annex IV.

²⁵⁴ Arts. 10–12.

²⁵⁵ See A. Kiss and D. Shelton, *International Environmental Law* (London: Graham & Trotman, 1991), 220.

²⁵⁶ Bonn, 3 December 1976, in force 5 July 1985, 16 ILM 265 (1977); Art. 2(1) and (2) and Annex 1.

²⁵⁷ Arts. 4, 5 and 7(1) and (2).

to further reduce chlorides in the river and to ensure that the water was restored to a drinkable quality.²⁵⁸ This required France to take additional measures to those required by the 1976 Convention to reduce the inputs of chlorides where the level of chlorides exceeds 200 milligrams per litre in the Rhine at the Netherlands–Germany border, and to provisionally store the chlorides on land.²⁵⁹ The Protocol established new obligations in respect of the discharge of chloride ions and replaced Annex II to the 1976 Convention with a new Annex IV.²⁶⁰ The Protocol also allocated the costs incurred by the parties in fulfilment of these obligations.²⁶¹

A dispute arose between the Netherlands and France under the 1976 Convention and its 1991 Protocol concerning the amount of money France was required to return to the Netherlands under the Protocol. The Netherlands argued that the calculation should be based on a flat unit rate of France's storage and disposal operations, while France contended that the Netherlands was entitled to the actual costs it had incurred. The dispute was submitted to arbitration under the Protocol, and on 12 March 2004 the tribunal found in favour of the Netherlands' method of assessment.²⁶² The tribunal rejected an argument by the Netherlands that the 'polluter pays' principle applied in the case, on the basis that the principle was not reflected in the Protocol and was not part of general international law.²⁶³

In 1999, the parties concluded the Convention on the Protection of the Rhine.²⁶⁴ Upon its entry into force on 1 January 2003, the Convention repealed the 1963 Berne Pollution Agreement and the 1976 Rhine Chlorides Convention, to reflect an updated approach.²⁶⁵ The parties agreed to pursue a number of aims, including the sustainable development of the Rhine ecosystem, the production of drinking waters from the Rhine, the improvement of sediment quality, general flood prevention, and the protection and restoration of the North Sea in conjunction with other actions taken to protect it.²⁶⁶ Article 4 sets out a number of guiding principles to be observed in pursuing these aims, including the precautionary principle, the polluter pays principle and the principle of sustainable development. The contracting parties also agreed on various specific measures to protect the Rhine, including: prior authorisation of wastewater discharges or general rules laying down emissions limits; gradual reduction of discharges of hazardous substances, with a view to their complete elimination; monitoring of compliance with authorisations, discharges and general rules; periodical examination and adjustment (when substantial improvements in the state of the art permit or when the state of the receiving medium so necessitates) of authorisations and general rules; reduction of the risk of pollution from incidents or accidents; and prior authorisation of technical measures liable to have a serious effect on the ecosystem.²⁶⁷ The Rhine Commission's powers were strengthened by the

²⁵⁸ Brussels, 25 September 1991, in force 1 November 1994, 994 UNTS 3. ²⁵⁹ Art. 1(1) and Annex I.

²⁶⁰ Arts. 5 and 6 and Annex IV. ²⁶¹ Art. 4 and Annex III.

²⁶² *Case Concerning the Auditing of Accounts Between the Kingdom of the Netherlands and the French Republic Pursuant to the Additional Protocol of 25 September 1991 to the Convention on the Protection of the Rhine Against Pollution by Chlorides of 3 December 1976 (Netherlands v. France)* 25 RIAA 267 (Permanent Court of Arbitration, 2008) (*Rhine Chloride* arbitration). See also L. Boisson de Chazournes, 'The Rhine Chlorides Arbitration Concerning the Auditing of Accounts: Its Contribution to International Law', in *The Rhine Chlorides Arbitration Concerning the Auditing of Accounts* (The Hague, T.M.C. Asser/ Cambridge University Press, 2008), ch. 1.

²⁶³ *Rhine Chloride* arbitration, para. 103.

²⁶⁴ Convention on the Protection of the Rhine, Berne, 12 April 1999, OJ L289, 16 November 2000, 30. ²⁶⁵ Art. 19.

²⁶⁶ Art. 3. ²⁶⁷ Art. 5(4).

Convention, including the power to take binding decisions on measures to be implemented by the contracting parties.²⁶⁸

In 1986, following the Sandoz accident, the Rhine states adopted the Rhine Action Programme, which was intended to produce potable water from the river and to improve it sufficiently to allow the return of indigenous aquatic life. This was to be achieved on the basis of a 50 per cent reduction of discharges of thirty priority substances to 1985 levels by 1995. The Action Programme was succeeded by the 2001 Programme on the Sustainable Development of the Rhine, to implement the general aims and principles set forth in Articles 3 and 4 of the 1999 Convention.²⁶⁹ The Programme defines general protection targets for the period up to 2020 including restoration of the main stream, permanent compliance with the target values of all substances relevant for the Rhine in water, suspended matter, sediments and organisms, protection of groundwater against the infiltration of polluted Rhine water and protection of Rhine water against polluted groundwater.²⁷⁰

Americas

Since the early part of the twentieth century, the states of North and South America have adopted many bilateral agreements for the protection of freshwater resources. The most comprehensive rules are found in the agreements between Canada and the United States which relate to the protection and use of the Great Lakes, although important instruments are also in force between the United States and Mexico,²⁷¹ and between Central and South American countries.²⁷²

²⁶⁸ Arts. 8 and 10.

²⁶⁹ Conference of the Rhine Ministers, 'Rhine 2020: Programme on the Sustainable Development of the Rhine', Strasbourg, 29 January 2001.

²⁷⁰ *Ibid.*, Part 2.

²⁷¹ Washington Treaty Relating to the Utilization of the Waters of the Colorado and Tijuana Rivers and of the Rio Grande, 3 February 1944, 3 UNTS 314; Agreement Concerning the Permanent and Definitive Solution to the International Problems of the Salinity of the Colorado River, 30 August 1973, 915 UNTS 203; see S. P. Mumme, 'Innovation and Reform in Transboundary Resource Management: A Critical Look at the International Boundary Water Commission, US and Mexico', 33 *Natural Resources Journal* 93 (1993); 'Symposium: Water Issues in the US-Mexico Borderlands', 40 *Natural Resources Journal* 199 (1999); S. P. Mumme, 'The Liquid Frontier: Water and Sustainable Development on the US-Mexico Border', 48(4) *Journal of the West* 104 (2009); A. Milman and C. A. Scott, 'Beneath the Surface: Intratational Institutions and Management of the United States-Mexico Transboundary Santa Cruz Aquifer', 28 *Environment and Planning C: Government and Policy* 528 (2010). In late 2012, the parties agreed on the groundbreaking 'Minute 319' which allows for a spring pulse flow from the Colorado River into Mexico. See further International Boundary and Water Commission, Minute 319: Interim International Cooperative Measures in the Colorado River Basin through 2017 and Extension of Minute 318 Cooperative Measures to Address the Continued Effects of the April 2010 Earthquake in the Mexicali Valley, Baja California, 20 November 2012, at www.ibwc.state.gov/Treaties_Minutes/minutes.html; A. D. Tarlock, 'Mexico and the United States Assume a Legal Duty to Provide Colorado River Delta Restoration Flows: An Important International Environmental and Water Law Precedent', 23 *RECIEL* 76 (2014).

²⁷² Treaty on the River Plate Basin, Brasilia, 23 April 1969, in force 14 August 1970, 875 UNTS 3; Treaty Concerning the Rio de la Plata and the Corresponding Maritime Boundary, 19 November 1973, Brasilia, 23 April 1969, in force 14 August 1970, 875 UNTS 3; see J. Trevin and J. Day, 'Risk Perception in International River Basin Management: The Plata Basin Example', 30 *Natural Resources Journal* 87 (1990); L. de Castillo Laborde, 'Legal Regime of the Rio de la Plata', 36 *Natural Resources Journal* 251 (1996).

1909 Boundary Waters Treaty

The 1909 Washington Treaty Relating to Boundary Waters and Questions Arising Along the Boundary Between the US and Canada (1909 Boundary Waters Treaty) was a pioneering treaty that was adopted to protect water levels and the navigability of the Great Lakes and other boundary waters. It includes one of the earliest treaty provisions on the prevention of pollution, and was the first instrument to establish an international institution with competence for pollution matters.²⁷³ Article IV of the 1909 Treaty provides that 'boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property of the other'; the Treaty does not define the terms 'pollution' or 'injury'. The Treaty established a permanent International Joint Commission comprising six commissioners with three appointed by each party.²⁷⁴ Its functions include approval of governmental applications for works that may affect the level or flows of boundary and other waters, surveillance and monitoring, and dispute settlement provisions (which have not yet been invoked).²⁷⁵ Under Article IX, the parties can refer to the Commission any question involving the rights or interests of either party along the common frontier, following which the Commission can adopt reports and make recommendations which are advisory. The Commission has considered a number of pollution problems, following references from the parties, resulting in the adoption of publications such as the 1970 report on phosphate and other pollution, which led directly to a 1972 agreement between the United States and Canada.²⁷⁶

Gut Dam Arbitration

The use of the waters of the Great Lakes by Canada and the US has been the subject of numerous disputes between the two states, and led to the establishment of the Lake Ontario Claims Tribunal in 1965 to adjudicate claims by US nationals against Canada for damage caused to property owned by US nationals by the construction and operation of the Gut Dam²⁷⁷ on the St Lawrence River between Adams Island in Canadian territory and Les Galops Island in US territory.²⁷⁸ The dam was intended to stop the flow of water through the channel between the two islands. Between 1904 and 1951, the water level of the St Lawrence River and Lake Ontario increased, principally as a result of the diversion by Canada of water into the Great Lakes to increase hydroelectric power generation, and also because of a reduction in the rate at which the US withdrew water at Chicago. In 1951 and 1952, the water in the St Lawrence River reached unprecedented levels which, after severe storms, caused extensive flooding and erosion damage to the north and south shores of all the Great Lakes, including Lake Ontario. The damage that was caused to US property was argued by the owners to be the result of the construction of the

²⁷³ 11 January 1909, in force 5 May 1910, TS No. 548, 10 IPE 5158. See S. Toope and J. Brunnée, 'Freshwater Regimes: The Mandate of the International Joint Commission', 15 *Arizona Journal of International and Comparative Law* 273 (1998).

²⁷⁴ Art. VII. ²⁷⁵ Arts. VIII–X.

²⁷⁶ International Joint Commission, *Pollution of Lake Erie, Lake Ontario and the International Section of the St Lawrence River* (1970). See also International Joint Commission, 'Risks of Oil Pollution in Lake Erie', 27 October 1969, 8 ILM 1363 (1969).

²⁷⁷ The details concerning the dispute are set out in the Report of the Agent of the United States, 8 ILM 118 (1968); see also the Agreement establishing the Tribunal, 4 ILM 468 (1965).

²⁷⁸ The US gave permission for the construction, subject to the condition that Canada would pay compensation if the dam caused damage or detriment to US property owners (Report of the US Agent, 120).

Gut Dam. In 1953, Canada removed the Gut Dam, and following the failure of efforts to reach a friendly settlement the tribunal was established in 1965.

The US claimed a total of \$653,386 USD from Canada. In 1968, the US and Canada settled the case for \$350,000 USD as full and final satisfaction of all claims of US nationals 'for damage allegedly caused by Gut Dam'.²⁷⁹ The settlement followed the earlier findings by the tribunal that Canada was potentially liable to any citizen of the US whose property suffered damage or who suffered detriment caused by the construction and operation of Gut Dam (not only property owners on Les Galops Island, as Canada had argued), and that Canada had in diplomatic correspondence, prior to the establishment of the tribunal, recognised its obligation to pay compensation for damage attributable to the Gut Dam.²⁸⁰ Canada agreed to settle after the tribunal had concluded that its only task was to determine whether the dam had caused the damage for which claims were filed and the quantum of such damages. Although the settlement was stated to be without prejudice to the legal and factual positions maintained by the parties, it is not unreasonable to infer that the episode supports the conclusion that states are subject to limitations on their use of international waters, and that they may be subject to an international claim if such use leads to damage to foreign private property. The case does not provide support either way on the question of whether states are liable for pure environmental damage, since all the claims related to property damage resulting from changes to the environment.

1978 Great Lakes Water Quality Agreement

In 1978, the United States and Canada signed an Agreement on Great Lakes Water Quality (1978 Great Lakes Water Quality Agreement),²⁸¹ which was amended by Protocols in 1983,²⁸² 1987²⁸³ and 2012, and supersedes the earlier 1972 Agreement.²⁸⁴ The 2012 Protocol significantly updated and modernised the 1978 Agreement in recognition of the need 'to address current impacts on the quality of the Waters of the Great Lakes, and anticipate and prevent emerging threats to the quality of the Waters of the Great Lakes'.²⁸⁵ The 1978 Agreement, as amended, is designed to 'restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes', including by the elimination or reduction to the maximum extent practicable of the environmental threats to the waters of the Great Lakes.²⁸⁶ The 1978 Agreement records a number of principles and approaches that guide the parties in seeking to achieve the purpose of the Agreement, including principles of accountability, adaptive management, adequate treatment, anti-degradation, coordination, innovation, polluter pays, precaution, prevention, public engagement and sustainability. Specific approaches endorsed include those of science-based

²⁷⁹ *Ibid.*, 141. ²⁸⁰ *Ibid.*, 138–9.

²⁸¹ Ottawa, 22 November 1978, in force 22 November 1978, 30 UST 1383; see T. Vigod, 'Global Environmental Problems: A Legal Perspective on Great Lakes Toxic Pollution', 12 *Syracuse Journal of International Law and Commerce* 185 (1985); G. Francis, 'Binational Co-operation for Great Lakes Water Quality: A Framework for the Groundwater Connection', 65 *Chicago-Kent Law Review* 359 (1989); N. D. Hall, 'Toward a New Horizontal Federalism: Interstate Water Management in the Great Lakes Region', 77 *Colorado Law Review* 405 (2006).

²⁸² 16 October 1983, in force 16 October 1983, TIAS No. 10798.

²⁸³ 18 November 1987, in force 18 November 1987, TIAS No. 11551.

²⁸⁴ See 1972 Agreement Between the United States and Canada Concerning Great Lakes Water Quality, Ottawa, 15 April 1972, in force 15 April 1972, 11 ILM 694 (1972).

²⁸⁵ 2012 Protocol, Preamble.

²⁸⁶ Art. 2. The system includes all streams, rivers, lakes and other bodies of water within the drainage basin of the St Lawrence River (*ibid.*, Art. 1(j)).

management, an ecosystem approach and tributary management.²⁸⁷ The parties also adopt ‘the principle of virtual elimination’ for the elimination of releases of chemicals of mutual concern (elaborated in Annex 3) and ‘the philosophy of zero discharge’ for control of releases of such chemicals.²⁸⁸ The ‘General Objectives’ of the 1978 Agreement are that the waters of the Great Lakes should (i) be a source of safe, high-quality drinking water; (ii) allow for swimming and other recreational use, unrestricted by environmental quality concerns; (iii) allow for human consumption of fish and wildlife unrestricted by concerns due to harmful pollutants; (iv) be free from pollutants in quantities or concentrations that could be harmful to human health, wildlife, or aquatic organisms, through direct exposure or indirect exposure through the food chain; (v) support healthy and productive wetlands and other habitats to sustain resilient populations of native species; (vi) be free from nutrients that directly or indirectly enter the water as a result of human activity, in amounts that promote growth of algae and cyanobacteria that interfere with aquatic ecosystem health, or human use of the ecosystem; (vii) be free from the introduction and spread of aquatic invasive species and free from the introduction and spread of terrestrial invasive species that adversely impact the quality of the Waters of the Great Lakes; (viii) be free from the harmful impact of contaminated groundwater; and (ix) be free from other substances, materials or conditions that may negatively impact the chemical, physical or biological integrity of the waters of the Great Lakes.²⁸⁹ Under Article 3(b) and Annex 4 parties must also cooperatively identify and work to attain certain ‘Specific Objectives’ relating to each lake ecosystem and polluting substances. Implementation of these objectives rests with the respective domestic programmes of each party.²⁹⁰

The 1978 Agreement requires the parties – in cooperation with state, provincial, tribal and municipal governments, water agencies, other local agencies and the public – to ‘develop and implement programmes and other measures’ to fulfil the purpose of the Agreement and to achieve its General and Specific Objectives.²⁹¹ To that end, the programmes and measures are to be developed for pollution abatement, control and prevention from municipal and industrial sources, for pollution from agricultural, forestry and other land use, from contaminated sediments and dredging activities, sources of radioactive materials, and from onshore and offshore facilities.²⁹² Measures and programmes are also to be developed for aquatic invasive species,²⁹³ for conservation, and for enforcement action and monitoring.²⁹⁴ The parties also agreed to a notification and response procedure for pollution incidents,²⁹⁵ and established several institutions to promote consultation, management and review.²⁹⁶ One such institution is the innovative Great Lakes Public Forum, which is designed to provide an opportunity for public comment and input on the state of the lakes, binational priorities for science and action to inform future priorities and actions, and the progress of the parties in implementing commitments under the Agreement.²⁹⁷

The International Joint Commission assists in implementation of the 1978 Agreement by analysing and disseminating data and information, by tendering advice and recommendations, by providing assistance, by assisting and advising on scientific matters related to the Great Lakes

²⁸⁷ Art. 2(4). ²⁸⁸ *Ibid.*, subparas. (o) and (p).

²⁸⁹ Art. 3(a). See also Annex 3 (Chemicals of Mutual Concern), Annex 5 (Discharges from Vessels), Annex 6 (Aquatic Invasive Species), Annex 7 (Habitat and Species), Annex 8 (Groundwater), Annex 9 (Climate Change Impacts), Annex 10 (Science).

²⁹⁰ Art. 3(2). ²⁹¹ Art. 4(1). ²⁹² Art. 4(2)(a). ²⁹³ Annex 6. ²⁹⁴ Art. 4(2)(b)–(c). ²⁹⁵ Art. 6.

²⁹⁶ Art. 5. ²⁹⁷ Art. 5(1).

Ecosystem and by investigating such matters as the parties may refer to it.²⁹⁸ The Commission also has specific functions of public consultation and public engagement, institutional coordination, and review, including the provision to the parties of triennial 'Assessment of Progress' reports.²⁹⁹ The powers of the Commission are broad, and include a competence to conduct public hearings and to compel testimony and the production of documents,³⁰⁰ to publish reports at its discretion, and to request the provision of information relating to water quality.³⁰¹ The parties are also required to enable the Commission to make available to the public all advice and recommendations made by the Commission to the parties.³⁰² A Great Lakes Water Quality Board, a Science Advisory Board and a Regional Office assist the Commission.³⁰³

Africa

African states have also adopted a number of important bilateral and regional treaties to protect and manage freshwater resources. Of particular note, because of their comprehensive approach, are the regimes established by treaty for the Niger Basin and the Zambezi River system.³⁰⁴ Other arrangements, for example in relation to the Nile, remain under discussion.³⁰⁵

Niger Basin

Under the 1963 Act Regarding Navigation and Economic Co-operation Between the States of the Niger Basin, the parties undertake to cooperate closely on projects likely to have an appreciable effect on the conditions of the waters and biological characteristics of the fauna and flora of the River Niger and its tributaries, under the auspices of an 'Intergovernmental Organization Concerned with the Exploitation of the River'.³⁰⁶ This organisation was subsequently renamed the River Niger Commission, under which the riparian states agree to inform the Commission of certain works which they propose to undertake and to abstain from carrying out any works likely to pollute the waters or modify the flora and fauna without adequate notice to and prior consultation with the Commission.³⁰⁷ The Convention Creating the Niger Basin Authority replaced the River Niger Commission with the Niger Basin Authority, which was designed to

²⁹⁸ Art. 7(1). ²⁹⁹ *Ibid.* ³⁰⁰ Art. 7(3), under legislation passed pursuant to the Boundary Waters Treaty.

³⁰¹ Arts. 7(2), (3) and (5) and IX(1). ³⁰² Art. 7(4). ³⁰³ Art. 8.

³⁰⁴ See also treaties for the Lake Chad Basin, the Senegal River and the River Gambia. See also the listing of instruments by the International Water Project at www.internationalwaterlaw.org/documents/africa.html

³⁰⁵ C. Mallat, 'Law and the Nile River: Emerging International Rules and the Shari'a', in P. Howell and J. A. Allen (eds.), *The Nile: Sharing a Scarce Resource* (Cambridge: Cambridge University Press, 1994), 365; J. Brunnée and S. Toope, 'The Changing Nile Basin Regime: Does Law Matter?', 43 *Harvard International Law Journal* 105 (2002); P. Kameri-Mbote, 'From Conflict to Cooperation in the Management of Transboundary Waters: The Nile Experience', in M. Berthold (ed.), *Linking Environment and Security – Conflict Prevention and Peacemaking in East and Horn of Africa* (Heinrich Boll Foundation, 2005), 6; T. S. Bulto, 'Between Ambivalence and Necessity: Occlusions on the Path Toward a Basin-Wide Treaty in the Nile Basin', 20(3) *Colorado Journal of International Environmental Law and Policy* 291 (2009) (republished, originally published 2(2) *Mizan Law Review* 201 (2008)); D. Z. Mekonnen, 'The Nile Basin Cooperative Framework Agreement Negotiations and the Adoption of a "Water Security" Paradigm: Flight into Obscurity or a Logical Cul-de-Sac?', 21(2) *European Journal of International Law* 421 (2010). The Agreement on the Nile Basin Cooperative Framework agreed in May 2010 is yet to enter into force. Interim arrangements are provided by the Nile Basin Initiative: www.nilebasin.org

³⁰⁶ Act Regarding the Navigation and Economic Co-operation Between the States of the Niger Basin, Niamey, 26 October 1963, in force 1 February 1966, 587 UNTS 9, Arts. 4 and 5.

³⁰⁷ Agreement Concerning the Niger River Commission and the Navigation and Transport on the River Niger, Niamey, 25 November 1964, in force 3 December 1982, 587 UNTS 21, Art. 12.

ensure the integrated development of the Niger Basin.³⁰⁸ The responsibilities of the Authority extend to environmental control and preservation, including the establishment of norms and measures in the alternative uses of the waters, prevention and reduction of pollution, and preservation of human health and genetic resources.³⁰⁹

On 30 April 2008, the parties adopted the Niger River Water Charter, a legally binding instrument.³¹⁰ The purpose of the Charter is to encourage cooperation based on solidarity and reciprocity for a sustainable, equitable and coordinated use of the Niger River hydrographic catchment area.³¹¹ The Charter provides guidance on general principles such as equitable and reasonable participation and use, the principle of no harm, precaution and prevention, and the polluter pays principle.³¹² It obliges parties to preserve the quantity and quality of resources, develop water planning, protection and management policies, and protect the environment.³¹³ It also establishes a Permanent Technical Committee, inter alia, to assist the parties in technical matters, and to facilitate dispute resolution. The Charter creates procedural rules on information exchange, notification and consultation for projects that may have significant adverse effects on other basin states,³¹⁴ provides for public participation subject to specific conditions,³¹⁵ and establishes a system for the amicable resolution of disputes, first through the Niger Basin Authority, and then through mediation and conciliation through the Permanent Technical Committee. If the dispute were to persist, it would go to the Conciliation Commission of the African Union, and as a last resort, the International Court of Justice.³¹⁶ In 2011, a new Annex on Protection of the Environment was agreed,³¹⁷ which aims to ensure adequate protection of the environment of the basin on the basis of sustainable, collaborative and participative management of the environment in accordance with the objectives of sustainable development.³¹⁸ The Annex consists of 23 chapters covering general principles, norms and tools (chapters 1–3), specific frameworks for dealing with water pollution, biodiversity conservation and land degradation (chapters 4–6), and provisions dealing with new challenges such as desertification, climate change and genetically modified organisms (chapters 7–11). The Annex also includes chapters dealing with the right of peoples in the basin relating to environmental issues (chapter 16) and dispute settlement (chapters 19–20).

Southern Africa, Including the Zambezi River³¹⁹

The 1987 Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System established an ambitious programme for environmentally sound water resources management to strengthen regional cooperation for sustainable development in eight African countries, under the auspices of the Southern African Development Community (SADC) (formerly the Southern African Development Co-ordination Conference, or SADCC).³²⁰ The Agreement adopted the Action Plan for the Environmental Management of the Common Zambezi River System (ZACPLAN) set out in Annex I to the Agreement, in the context of the Mar

³⁰⁸ Faranah Convention Creating the Niger Basin Authority, Faranah, 21 November 1980, IELMT 980:86, Art. 3(1).

³⁰⁹ Art. 4(2)(d). ³¹⁰ The Water Charter of the River Niger Basin, Niamey, Niger, 30 April 2008. ³¹¹ Art. 2.

³¹² Arts. 4–9. ³¹³ Arts. 10–12. ³¹⁴ Arts. 19–24. ³¹⁵ Arts. 25 and 26. ³¹⁶ Chapter IX, Arts. 29–31.

³¹⁷ Niger Basin Authority, Annexe n°1 relative à la protection de l'environnement, 30 September 2011. ³¹⁸ Art. 3.

³¹⁹ See also M. Picard, 'Water Treaty Regimes as a Vehicle for Cooperation to Reduce Water-Related Disaster Risk: The Case of Southern Africa and the Zambezi Basin', in J. Peel and D. Fisher (eds.), *The Role of International Environmental Law in Reducing Disaster Risk* (The Hague/London: Martinus Nijhoff, 2016), 212.

³²⁰ Harare Agreement, 28 May 1987, in force 28 May 1987, 27 ILM 1109 (1988).

del Plata Action Plan and UNEP's programme on the environmentally sound management of inland water (EMINWA). The ZACPLAN, which was designed to deal with water resource and environmental management problems of the river system in a coordinated manner to avoid possible future conflicts, is divided into four component elements comprising environmental assessment, environmental management, environmental legislation, and supporting measures.³²¹ While setting a broad framework for cooperation, the ZACPLAN also identified programme categories and specific programmes, established a workplan and timetable, and institutional and financial arrangements, including the establishment of a Trust Fund.³²² The ZACPLAN was implemented by the SADC, an Intergovernmental Monitoring and Co-ordinating Committee, a Co-ordinating Unit, and national focal points.³²³ Although it did not become the hoped-for vehicle for basin management it paved the way for subsequent developments such as the SADC Protocol.³²⁴

In 1995, the SADC states concluded a Protocol on Shared Watercourses in the SADC region, which was revised in August 2000.³²⁵ The Revised Protocol's objective is to 'foster closer co-operation for judicious, sustainable and co-ordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation'.³²⁶ The states parties recognise the unity and coherence of shared watercourses and that their utilisation should be open to each watercourse state on an equitable and reasonable basis.³²⁷ The states parties also undertake to respect existing rules of 'customary or general' international law relating to shared watercourse utilisation and management.³²⁸

Under the Revised Protocol, parties are required, individually or jointly, to protect and preserve shared watercourse ecosystems.³²⁹ States parties must notify other watercourse states of planned measures that may have a 'significant adverse effect' and, if necessary, negotiate the possible effects of planned measures on the condition of a shared watercourse.³³⁰ States parties using a shared watercourse must take all appropriate measures to prevent significant harm to other watercourse states, but, if harm is nevertheless caused, the state causing the harm shall take 'all appropriate measures' to eliminate or mitigate the harm; and, where appropriate, discuss the question of compensation.³³¹ The Revised Protocol establishes several organs responsible for implementation of the Protocol, including a Committee of Water Ministers and a Water Sector Co-ordinating Unit.³³²

In 2004, the Zambezi River basin countries adopted an Agreement to Establish the Zambezi Watercourse Commission (ZAMCOM).³³³ The Commission's objectives are to promote equitable and reasonable utilisation of the water resources of the Zambezi watercourse as well as efficient

³²¹ Annex I, paras. 28–39. ³²² Annex II, paras. 25–7 and Appendix II. ³²³ Arts. 2 and 3.

³²⁴ A. Turton, *New Thinking on the Governance of Water and River Basins in Africa: Lessons from the SADC Region*, Research Report No. 6 (South African Institute of International Affairs, 2010).

³²⁵ Protocol on Shared Watercourses in the Southern African Development Community (SADC) Region, Maseru, 16 May 1995, in force 29 September 1998; K. K. Lebotse, 'Southern African Community Protocol on Shared Watercourses: Challenges of Implementation', 12 *Leiden Journal of International Law* 173 (1999); S. Salman, 'Legal Regime for the Use and Protection of International Watercourses in the Southern African Region: Evolution and Context', 41 *Natural Resources Journal* 981 (2001). The Heads of State or Government of the SADC agreed to a Revised Protocol in August 2000, which repealed and replaced the 1995 Protocol when it entered into force on 22 September 2003.

³²⁶ Art. 2. ³²⁷ Arts. 3.1, 3.2 and 3.7. ³²⁸ Art. 3.3. ³²⁹ Art. 4.2(a). ³³⁰ Art. 4.1. ³³¹ Art. 3.10.

³³² Art. 5.1.

³³³ Agreement on the Establishment of the Zambezi Watercourse Commission, 13 July 2004, entered into force 22 September 2011.

management and sustainable development,³³⁴ requiring the river to be managed and utilised in an equitable and reasonable manner.³³⁵ It sets out general responsibilities for member states, and commits them to abide by principles of sustainable development and utilisation, prevention of harm, precaution, intergenerational equity, assessment of transfrontier impacts and cooperation.³³⁶ It also provides for a non-compliance procedure, and for dispute resolution under the Tribunal of the SADC or other means as agreed by the parties.³³⁷ ZAMCOM is composed of three organs: the Council of Ministers, the Technical Committee and the Secretariat. The role of the Council is to adopt policies and provide guidance to the parties, and the Technical Committee is in charge of implementing the policies. The Secretariat provides technical and administrative services to the Council under the supervision of the Technical Committee.

Asia

The Himalayas, the headwaters of Asia's rivers, provides water to roughly one-fifth of the world's population. Over the past two decades, there have been a number of significant developments in Asia, to supplement the limited number of earlier river treaties.³³⁸

Mekong River Basin

In 1995, the four lower basin states of the Mekong River Basin signed the Agreement on Co-operation for the Sustainable Development of the Mekong River Basin. This commits Thailand, Vietnam, Laos and Cambodia to cooperate 'in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin', including irrigation, hydropower, navigation, flood control, fisheries, timber floating, recreation and tourism, with a view to minimising the harmful effects that might result from natural occurrences and human-made activities.³³⁹ The Agreement commits parties to the protection of the environment, the application of the principles of reasonable and equitable utilisation and the prevention and cessation of harmful effects, as well as the application of state responsibility for harmful effects which cause 'substantial damage'.³⁴⁰ The Agreement established a Mekong River Commission (MRC), now based in Phnom Penh.³⁴¹

A large concern that continues to loom over the Agreement is that China and Myanmar, the two upper basin states, are not parties. China in particular has utilised its share of the Mekong for ambitious hydroelectric projects to meet its growing energy needs. Nevertheless, the two countries have been Dialogue Partners with the MRC since 1996, and there are continuing signs of growing cooperation. On 1 April 2002, China signed an agreement with the MRC to provide regular hydrological data and information to the MRC Secretariat during flood seasons. In April 2010, China indicated it was ready to begin providing data and information during dry seasons

³³⁴ Art. 5. ³³⁵ Arts. 13 and 14. ³³⁶ Art. 12. ³³⁷ Arts. 20 and 21.

³³⁸ I. Kasto, *Water Management and Environmental Protection in Asia and the Pacific* (Tokyo: University of Tokyo Press, 1983); S. M. A. Salman and K. Uprety, *Conflict and Cooperation on South Asia's International Rivers: A Legal Perspective* (World Bank, 2002); N. Islam, *The Law of Non-Navigational Uses of International Watercourses: Options for Regional Regime-Building in Asia* (Alphen aan den Rijn: Kluwer, 2010).

³³⁹ Chiang Rai (Thailand), 5 April 1995, in force 5 April 1995, 34 ILM 864 (1995), Art. 1; G. Bowder and L. Ortolano, 'The Evolution of an International Water Resources Management Regime in the Mekong River Basin', 40 *Natural Resources Journal* 499 (2000); N. Islam, 'The Case of the Mekong River Basin', in *Law of Non-Navigational Uses of International Watercourses*, 247.

³⁴⁰ Arts. 3, 5, 7 and 8. ³⁴¹ Arts. 11–33.

as well. In November 2015, the foreign ministers of China, Myanmar, Laos, Thailand, Cambodia and Vietnam launched the Lacang–Mekong Cooperation Mechanism, which includes provisions on water resources cooperation.³⁴² It is widely hoped that such efforts at cooperation in management of water resources in the heavily populated Mekong region will continue to grow.

Subcontinental Asia

In addition to the longer-standing Indus Waters Treaty between India and Pakistan – at issue in the *Indus Waters Arbitration* – India became a party to two important bilateral treaties in 1996, notable for their differing approaches. The Bangladesh–India Treaty on sharing the waters of the Ganges River³⁴³ and the India–Nepal Treaty on sharing the waters of the Mahakali River³⁴⁴ were intended to bring an end to long-running differences between India and its neighbours over the entitlement to water flows following the construction by India of barrages on the Ganges and Mahakali Rivers.³⁴⁵ The treaties aim to establish long-term water discharge regimes of thirty and seventy-five years, respectively, focusing on the utilisation of waters rather than their conservation. These instruments take only limited account of developments in the international law of watercourses and efforts to promote sustainable development. The two treaties adopt similar approaches, but differ in their scope of application, the extent of their reliance upon general principles governing rights over shared watercourses, and dispute settlement arrangements.

The Bangladesh–India Treaty has as its principal objective the determination of the amount of water to be released by India to Bangladesh at the Farraka Barrage on the Ganges for a period of thirty years (Articles I and XII). The difficulty of this task is not apparent from the text of the Treaty, which makes only implicit reference to the long-running dispute between the two countries following the construction and operation by India of the Farraka Barrage.³⁴⁶ The 1996 Treaty established a new formula for sharing the Ganges waters at Farraka in the dry season (1 January to 31 May), and also provided that below Farraka the waters are not to be reduced further except for ‘reasonable use’ in a limited amount (Article III). Further provision is made for the situation where the flow falls below 50,000 cusecs (Article II(iii)). The sharing arrangements are to be reviewed every five years, and if no agreement can be reached on adjustments India is to release at least 90 per cent of Bangladesh’s share as provided by Article II. The Treaty makes reference to a number of guiding principles. It aims to achieve ‘optimum utilisation’ of the waters of the region, bringing a ‘fair and just’ solution to the Farraka waters problem but without establishing ‘any general principles of law or precedent’ (Preamble). It provides for application of the principles of ‘equity, fair play and no harm to either party’ to emergency situations, future adjustments of the Treaty, and the conclusion of agreements for

³⁴² Ministry of Foreign Affairs of the People’s Republic of China, Five Features of Lacang–Mekong River Cooperation, 17 March 2016, at www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1349239.shtml

³⁴³ New Delhi, 12 December 1996, 36 ILM 519 (1997). The Treaty entered into force upon signature and filled the gap left when a 1977 agreement – the Bangladesh–India, Agreement on Sharing of the Ganges’ Waters, Dacca, 5 November 1977, 17 ILM 103 (1978) – lapsed.

³⁴⁴ New Delhi, 12 February 1996, 36 ILM 531 (1997).

³⁴⁵ B. Desai, ‘Sharing of International Water Resources: The Ganga and Mahakali River Treaties’, 3 *Asia Pacific Journal of Environmental Law* 172 (1998); S. Salman and K. Uprety, ‘Hydro–Politics in South Asia: A Comparative Analysis of the Mahakali and the Ganges Treaties’, 39 *Natural Resources Journal* 295 (1999); S. Subedi, ‘Hydro–Diplomacy in South Asia: The Conclusion of the Mahakali and Ganges River Treaties’, 93 *American Journal of International Law* 953 (1999).

³⁴⁶ See N. Islam, ‘International watercourses law and the Farraka Barrage dispute’ (PhD thesis, London University, 2000); Islam, ‘The Case of the Ganges River Basin’, in *Law of Non-Navigational Uses of International Watercourses*, 311.

other rivers (Articles II(iii), X and IX). The Treaty establishes an Indo-Bangladesh Joint Rivers Commission with the more limited mandate of monitoring daily flows, submitting data and implementing arrangements under the Treaty (Articles IV, VI and VII). The Treaty refers disputes to the Indo-Bangladesh Joint Rivers Commission and then the two governments (Article VII). Negotiations between Bangladesh and India for similar agreements for the Teesta River and other common rivers continue.

The Mahakali River (known as the Sharda River in India) has formed the border between Nepal and India since 1816, and has been the subject of tension between the two countries since India's occupation of some 50 square kilometres of land at its source following the India-China conflict of 1961. The 1996 Treaty replaced a 1992 agreement which Nepal had rejected as providing inadequate amounts of water and electricity. The 1996 Treaty has four objectives. First, it settles Nepal's entitlement to waters from the existing Sarada Barrage (Article 1). Second, it authorises (without prejudice to Nepal's sovereign rights over that land) India's prior construction of the part of the recently constructed Tanakpur Barrage which occurred on 2.9 hectares of Nepalese territory; in return, Nepal receives an agreed supply of water, a guaranteed amount of electricity annually, the construction by India of a new electricity transmission line, and additional water and electricity in the event that the flow of the Mahakali River is subsequently augmented by new works (Article 2). Third, it provided framework rules for the construction of an integrated Pancheshwar Multipurpose Project on the boundary along the Mahakali River where the two states have equal rights in the water (to be the largest dam in Asia, with two power stations of equal capacity, the costs and total energy output of which are to be shared, although Nepal agrees to sell some of its electricity to India (Article 3)). Fourth, it commits India to supply irrigation water to Nepal (Article 4). The Treaty also requires all other projects in the Mahakali River – where it is a boundary river – to be designed and implemented on the basis of the 'principles' set forth in the Treaty (Article 6). The Treaty provides for 'equal partnership' in the context of the project's objective of producing 'maximum total net benefit' (Article 3(1)), and makes only limited reference to underlying principles of 'equality, mutual benefit and no harm to either party' (Article 9(1)). Nepal's water requirements are to be given 'prime consideration' (Article 5(1)), and the parties agree not to obstruct or divert the waters so as to adversely affect its natural flow and level except by agreement, provided that local users may take a limited amount (Article 7). The Treaty established the Mahakali River Commission, to make recommendations for the conservation and utilisation of the river, evaluation of projects, and examination of differences between the parties concerning interpretation and application of the Treaty (Article 9(3)). Disputes go to a tribunal of three arbitrators, the decisions of which are to be final, definitive and binding (Article 11).

Middle East

Countries in this region face the problem of increasingly scarce water resources, coupled with past practices of poor water management. Efforts to secure cooperative water sharing agreements have grown in recent years, even in some of the most conflict-ridden parts of the region such as the Israeli-Palestinian border area.³⁴⁷

³⁴⁷ See D. Brooks and J. Trottier, 'An Agreement to Share Water between Israelis and Palestinians: The FoEME Proposal', March 2012, available at [http://foeme.org/uploads/13411307571~%5E\\$%5E~Water_Agreement_FINAL.pdf](http://foeme.org/uploads/13411307571~%5E$%5E~Water_Agreement_FINAL.pdf)

Israel–Jordan Peace Treaty

The 1994 Israel–Jordan Peace Treaty is of singular importance for the development of water law in the Middle East.³⁴⁸ Its Article 6 is intended to contribute to a ‘comprehensive and lasting settlement of all the water problems’ between the two countries. It commits the parties to agree mutually to recognise the rightful allocations of both of them in Jordan River and Yarmouk River waters and in certain groundwaters ‘in accordance with agreed acceptable principles, quantity and quality’ as provided for in Annex II to the Treaty (Article 6(1)). By Article 6(2), the parties

recognising the necessity to find a practical, just and agreed solution to their water problems . . . jointly undertake to ensure that the management and development of their water resources do not, in any way, harm the water resources of the other Party.³⁴⁹

The parties agree to cooperate on alleviating water shortages, recognising that water issues must be dealt with ‘in their totality’, and commit to develop existing and new water resources, prevent contamination, assist in alleviation, share information and conduct joint research and development.³⁵⁰ Annex II to the Treaty provides for detailed allocations of water quantities, for storage arrangements and the maintenance of water quality and protection against ‘any pollution, contamination, harm or unauthorized withdrawals of each other’s allocations’. It also makes provision for the disposal of wastewaters, for the protection and use of groundwaters, and for cooperation, including through the establishment of a Joint Water Committee.

Jordan–Saudi Arabia Al-Sag/Al-Disi Aquifer Agreement

On 30 April 2015, the Kingdom of Jordan and the Kingdom of Saudi Arabia entered into an agreement for the Management and Utilization of the Ground Waters in the Al-Sag/Al-Disi Layer, a groundwater aquifer on their shared border.³⁵¹ The Agreement is brief, consisting of only four articles. By Article 2 the parties agreed ‘on the necessity for the proper management, utilization and sustainability of the waters of the Al-Sag/Al-Disi Layer’ and specified several measures for the achievement of this objective, including: the elimination of groundwater extraction activities in the area within a period of five years; monitoring of the quality and level of the groundwaters; the protection of the groundwaters from any pollution; and the limitation of any use of groundwaters extracted from the area to municipal purposes in the two states. Article 3 establishes a Joint Saudi–Jordanian Technical Committee to supervise implementation of the Agreement and Article 4 provides for review of the agreement every twenty-five years.

³⁴⁸ 34 ILM 46 (1995); see R. Fathallah, ‘Water Disputes in the Middle East: An International Law Analysis of the Israel–Jordan Peace Accord’, 12 *Journal of Land Use and Environmental Law* 119 (1996); O. Wiczak, ‘An Analysis of the Treaty of Peace Between Israel and Jordan in the Context of International Water Law’, 14 *Yearbook of International Environmental Law* 139 (2003); and, more generally, J. A. Allan and C. Mallat (eds.), *Water in the Middle East: Legal, Political and Commercial Implications* (London: Tauris, 1995). See also Israel–Jordan–PLO Declaration on Co-operation on Water-Related Matters, 13 February 1996, 36 ILM 761 (1997).

³⁴⁹ Art. 6(2). ³⁵⁰ Art. 6(3).

³⁵¹ *Agreement between the Government of the Hashemite Kingdom of Jordan and the Government of the Kingdom of Saudi Arabia for the Management and Utilization of the Ground Waters in the Al-Sag/Al-Disi Layer*, Riyadh, 30 April 2015, unofficial English translation available at http://internationalwaterlaw.org/documents/regionaldocs/Disi_Aquifer_Agreement-English2015.pdf

CONCLUSIONS

The management of freshwater presents one of the greatest environmental challenges facing the international community, largely because pollution and overuse have led to unsanitary conditions which contribute to the world's most serious health problems. In this sense, it is also, clearly, a major human rights issue. According to the 2015 report of the WHO/UNICEF Joint Monitoring Programme on Water Supply and Sanitation, at least 663 million people in the world do not have access to safe drinking water and 2.4 billion have no access to improved sanitation, almost all of them in developing countries.³⁵² In those countries, every year an estimated 3 million people, mainly infants and young children, die prematurely from water-related diseases.³⁵³ In the face of statistics such as these, international law cannot, in the absence of strong political will and adequate financial resources, be expected to produce immediate results.

What international law seeks to do is to set a framework according to which minimum international standards can be developed and effective, practical measures applied. Apart from the principles and rules of international law to which they are subject, freshwater resources are now the subject of a global framework convention, together with a growing range of bilateral and regional agreements that specifically address the use of freshwater resources, and their protection from contamination by pollution. These provide the first steps on which further developments might be constructed. Although the main emphasis in the past has been on developing cooperative international arrangements to govern use, in recent years the attention given to conservation has increased markedly, and treaties such as the 1992 Watercourses Convention and the 1997 Watercourses Convention, as well as the ILC's 2008 Articles on Transboundary Aquifers, reflect the widely held view that states are no longer entitled, as a matter of international law, to allow activities to take place which cause significant pollution to shared freshwater resources.

This conclusion nevertheless should not obscure the significant amount of work that remains to be done if international law is to contribute to halting overuse of freshwater and its pollution – challenges that are only likely to grow with increasing water variability brought about by climate change. There continue to be three priority areas. First, it is clear that rules establishing general standards and obligations, including those established by customary law, will be wholly inadequate. There is a need to develop specific, enforceable international water quality standards, at the local, regional or global levels, which may be of general application and which take account of particular regional or local circumstances: the judgment of the ICJ in the *Pulp Mills* case and the decision of the arbitral tribunal in the *Indus Waters Arbitration* indicate the way in which agreed standards may assist in resolving disputes. On the basis of these standards, increasingly stringent targets and timetables can be adopted for the elimination of harmful substances, or the conduct of certain activities, for particular rivers, lakes or groundwater resources, or on the basis of a regional approach.

Second, and in a similar fashion to that needed for the protection of oceans and seas, it is evident both from this chapter and from the rest of this book that protecting freshwater resources from pollution and overuse cannot be achieved other than by addressing the root causes of the

³⁵² WHO and UNICEF, *Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment* (2015), 4–5.

³⁵³ World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), 13. See also World Water Assessment Programme, *Managing Water under Uncertainty and Risk: The United Nations World Water Development Report 4* (2012).

problem (in particular, agricultural practices and industrial activities). Without effective environmental assessment on a broad scale of these practices and activities, both before and after their authorisation, it is unlikely that freshwater resources can benefit from anything other than cosmetic protection. In this regard, it will be equally important that the findings of such assessments are fully integrated into decision-making processes.

Third, the protection of freshwater resources will not be achieved without effective enforcement mechanisms available to public and private entities, which allow cases of non-compliance to be challenged. This means enhancing such mechanisms at the national and international levels, in combination with detailed and effective principles on access to information and proper environmental impact assessment procedures. In this regard, it is regrettable that the ICJ did not, in its *Pulp Mills* judgment or subsequent decisions, go further than it did in stressing the possibility of a closer and more symbiotic relationship between procedural and substantive obligations; in particular by giving real meaning and effect to procedural obligations and tying them more closely to the practical attainment of substantive requirements.³⁵⁴

FURTHER READING

General resources on international regulation of international watercourses:

- R. Baxter, *The Law of International Waterways* (Cambridge, MA/London: Harvard University Press, 1964);
 J. Lammers, *Pollution of International Watercourses: A Search for Substantive Rules and Principles* (The Hague/London: Martinus Nijhoff, 1984);
 J. Sette-Camara, 'Pollution of International Rivers', 186 *Recueil des Cours* 117 (1984);
 H. Ruiz Fabri, 'Règles Coutumières Générales et Droit International Fluvial', *Annuaire Français de Droit International* 818 (1990);
 E. Benvenisti, 'Collective Action in the Utilization of Shared Freshwater: The Challenges of International Water Resources Law', 90 *American Journal of International Law* 384 (1996);
 S. Toope and J. Brunnée, 'Environmental Security and Freshwater Resources: Ecosystem Regime Building', 91 *American Journal of International Law* 26 (1997);
 S. Salman and L. Boisson de Chazournes (eds.), *International Watercourses: Enhancing Co-operation and Managing Conflict* (World Bank Technical Paper No. 414, 1998);
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 S. McCaffrey, *The Law of International Watercourses* (Oxford: Oxford University Press, 2007, 2nd edn);
 O. McIntyre, *Environmental Protection of International Watercourses under International Law* (Aldershot, UK: Ashgate, 2007);
 P. Sands, 'Water and International Law: Science and Evidence in International Litigation', 22 *Environmental Law and Management* 151 (2010);
 S. McCaffrey, 'The Progressive Development of International Water Law', in F. Rocha Loures and A. Rieu-Clarke (eds.), *The UN Watercourses in Force: Strengthening International Law for Transboundary Water Management* (New York: Routledge, 2013);
 L. Boisson de Chazournes and M. Tignino (eds.), *International Water Law* (Cheltenham, UK: Edward Elgar, 2015);

³⁵⁴ On the implications of the approach taken by the Court, see Chapter 14, pp. 678ff; and Chapter 15, pp. 694–7.

S. Schmeier et al., 'Clearing the Muddy Waters of Shared Watercourses Governance: Conceptualizing International River Basin Organizations', 16(4) *International Environmental Agreements: Politics, Law and Economics* 597 (2016).

Resources on the 1997 UN Watercourses Convention:

- C. Bourne, 'The Primacy of the Principle of Equitable Utilization in the 1997 Watercourses Convention', 35 *Canadian Yearbook of International Law* 222 (1997);
- L. Caflisch, 'La Convention du 27 Mai 1997 sur l'Utilisation des Cours d'Eau Internationaux à des Fins Autre Que la Navigation', 43 *Annuaire Français de Droit International* 751 (1997);
- S. McCaffrey, C. Stephen and M. Sinjela, 'The 1997 United Nations Convention on International Watercourses', 92 *American Journal of International Law* 97 (1998);
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- A. Tanzi and M. Arcari, *The UN Convention on the Law of International Watercourses* (Oxford: Oxford University Press, 2000);
- F. V. Loures, *The UN Watercourses Convention in Force: Strengthening International Law for Transboundary Water Management* (New York: Routledge, 2013).

10

Biological Diversity

CHAPTER OUTLINE

This chapter examines the numerous international and regional instruments that address the conservation and sustainable use of biological diversity (biodiversity). The chapter is divided into four principal parts addressing:

1. the 1992 Convention on Biological Diversity (CBD, or Biodiversity Convention) and its Protocols;
2. other global biodiversity-related conventions;
3. other global instruments addressing specific habitats or species; and
4. regional and subregional agreements and instruments addressing biodiversity.

The chapter also highlights linkages between these instruments and other international agreements and arrangements relevant to the conservation and sustainable use of biodiversity.

INTRODUCTION

The terms ‘biological diversity’ or ‘biodiversity’ are of relatively recent usage in international law. Until the 1980s, international instruments tended to address ‘wildlife’ or ‘wild fauna and flora’,¹ and focused on species and habitats. ‘Biodiversity’ is a more inclusive term and can be considered in relation to three hierarchical categories which describe different aspects of living systems measured in different ways: genetic diversity; species diversity; and ecosystem diversity.

However measured, there is a scientific consensus that biodiversity is being lost. The 2015 Global Forest Resources Assessment indicated that 129 million hectares of forest have been lost since 1990, although the net rate of global deforestation slowed in that period.² The 2010 third Global Biodiversity Assessment (GBO 3) recorded that more than 95 per cent of North American grasslands have been lost, and that savannah and grassland have suffered severe declines elsewhere.³ The GBO 3 also noted that terrestrial habitats have become highly fragmented, threatening the viability of many species and ecosystem services. The Millennium Ecosystem Assessment reported that about 20 per cent of the world’s coral reefs have been

¹ R. Rayfuse, ‘Biological Resources’, in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), 365.

² FAO, *Global Forest Resources Assessment 2015: How Are the World’s Forests Changing?* (2016, 2nd edn), 3.

³ Secretariat of the CBD, *Global Biodiversity Outlook 3* (2010), 34.

destroyed and another 20 per cent degraded.⁴ In relation to species populations, the GBO 3 suggested that the population of wild vertebrate species fell by an average of 31 per cent globally between 1970 and 2006, with particularly severe declines in the tropics and in freshwater ecosystems.⁵ Much remains unknown about biodiversity – only a fraction of the species thought to exist have been described,⁶ and, as the Millennium Ecosystem Assessment acknowledged, ‘the extent of extinctions of undescribed taxa is unknown, the status of many described species is poorly known, it is difficult to document the final disappearance of very rare species, and there are time lags between the impact of a threatening process and the resulting extinction’.⁷

Reasons for conserving nature and biodiversity are essentially threefold. First, biodiversity provides an actual and potential source of biological resources including, for example, for use as food and feed, as well as for pharmaceutical, industrial and other applications. Second, biodiversity contributes to the maintenance of the biosphere in a condition that supports human and other life. This concept of ‘ecosystem services’ provided by biodiversity has become central to contemporary policy debates on the issue.⁸ Third, biodiversity conservation may be based on ethical, intrinsic, aesthetic and cultural considerations.

Threats to biodiversity come from multiple sources, both direct and indirect. The Millennium Ecosystem Assessment identified the most significant direct drivers affecting biodiversity. These include habitat change (loss, degradation and fragmentation), climate change, invasive species, over-exploitation and unsustainable use, and pollution.⁹ However, it noted that ‘changes in biodiversity and ecosystems are almost always caused by multiple, interacting drivers’.¹⁰ The GBO 3 cited IUCN Red List assessments showing habitat loss driven by agriculture and unsustainable forest management as the greatest cause of species moving closer to extinction. This included, for example, the conversion of forests to oil palm plantations, partly driven by demands for biofuels.¹¹ The destruction and loss of habitats and species bring with them anticipated and unanticipated ecological consequences: what is ultimately threatened is the ability of ecosystems to purify water, regenerate soil, protect watersheds, regulate temperature, recycle nutrients and waste, and maintain the atmosphere.

The Millennium Ecosystem Assessment also identified the key indirect drivers of changes in the status of biodiversity. These include economic activity, demographic change, sociopolitical factors, cultural and religious factors, and scientific and technological change.¹² Legal efforts to address loss of biodiversity therefore have to focus not only on the species and habitats that might be considered as at risk and requiring priority action, but also on the more complex underlying causes of biodiversity loss.

⁴ Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Biodiversity Synthesis* (2005), 42.

⁵ *Ibid.*, 24.

⁶ About 1.75 million species have been identified, while estimates of the total number of species in existence range from three to one hundred million, Secretariat of the CBD, *Sustaining Life on Earth* (2000). A study published in 2011 estimated that there are 8.7 million species in total, 6.5 million on land and 2.2 million in the oceans, suggesting that 86 per cent of terrestrial species, and 91 per cent of species in the marine species have yet to be described (C. Mora, D. P. Tittensor, S. Adl, A. G. B. Simpson and B. Worm, ‘How Many Species Are There on Earth and in the Ocean’, 9(8) *PLoS Biology* (2011), e1001127. doi:10.1371/journal.pbio.1001127).

⁷ Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being*, 36 ⁸ See pp. 408–9.

⁹ Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being*, 47.

¹⁰ *Ibid.* See also Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), 55.

¹¹ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3*, 55, and see pp. 428–31.

¹² Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being*, 49.

International law for the conservation of biodiversity has a long history and is relatively well developed, in the sense that there are a large number of global and regional treaties that address the issue. Modern international biodiversity conservation policy has emerged from a variety of sources. The 1972 Stockholm Declaration called for flora and fauna to be safeguarded for the benefit of present and future generations through careful planning or management; for the maintenance of the Earth's capacity to protect vital renewable resources; and for states to prevent pollution liable to harm living resources and marine life.¹³ Principle 4 declared:

Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, must therefore receive importance in planning for economic development.

The 1982 World Charter for Nature affirmed: that the genetic viability on Earth shall not be compromised; that population levels of all life forms 'must be at least sufficient for their survival, and to this end necessary habitats shall be safeguarded'; and that special protection shall be given to unique areas, to representative samples of all different types of ecosystem, and to the habitats of rare or endangered species.¹⁴ Chapter 15 of Agenda 21 addressed the conservation of biological diversity.¹⁵ Other initiatives contributing to the development of international law in this area include the IUCN World Conservation Strategy (1980)¹⁶ and the Action Plan for Biosphere Reserves (1984).¹⁷

However, the multiple direct and indirect drivers of biodiversity loss pose immense challenges for an effective response grounded in international law. Most of the early conservation agreements tended to focus principally, if not exclusively, on direct drivers, particularly unsustainable exploitation, and habitat loss and degradation. This focus upon maintaining viable populations of species and the habitats on which they depend led to approaches based on *in situ* and *ex situ* conservation measures for wild flora and fauna, as well as measures to protect specific habitats. Accordingly, the key international regulatory techniques relating to conservation and sustainable use, which are frequently incorporated into the global and regional agreements addressed in this chapter, include:

- (1) the establishment of protected areas;
- (2) prohibitions and/or regulations on the taking of particular species;
- (3) the establishment of seasons or other periods in which the taking of species is permitted;
- (4) regulated taking or exploitation subject to compliance with general standards limiting utilisation to that which is 'rational', or 'optimal' or 'sustainable';
- (5) prohibitions and/or regulation of international trade in species;
- (6) the establishment of quotas for the taking of species;
- (7) management of habitats;
- (8) management of ecosystems;
- (9) prohibition on methods or means of taking; and
- (10) prohibition on the introduction of new or alien species.

¹³ Principles 2, 3 and 7.

¹⁴ Paras. 2 and 3.

¹⁵ See Chapter 2, pp. 43–5.

¹⁶ Chapter 2, p. 38.

¹⁷ UNEP/GC.13/L.6.

Other more recent techniques include environmental impact assessment of projects that may adversely affect biodiversity,¹⁸ and risk assessment and risk management, for example, before new organisms are introduced into the environment.¹⁹

As discussed further below, the 1992 Convention on Biological Diversity (CBD) attempts to take a more holistic approach, addressing direct and indirect causes of biodiversity loss, and seeking to integrate, or 'mainstream', biodiversity considerations into all relevant policy areas.²⁰ While the approach of CBD seems more accurately to reflect the range and complexity of contemporary threats to biodiversity, the scope of the CBD and its potential implications for domestic policymaking are not without difficulty. As a result of its more holistic approach, the CBD encompasses a much wider range of issues than its predecessors, and has become a forum for a multifaceted policy dialogue involving states and other stakeholders.

In 2002, the parties to the CBD adopted the 2010 Biodiversity Target 'to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth'.²¹ In 2010, it was acknowledged that this target had not been met, that the state of biodiversity continued to decline and that pressures on biodiversity were increasing.²² At the end of 2010, the parties to the Biodiversity Convention adopted a new Strategic Plan for 2011–20, along with the Aichi Biodiversity Targets.²³ The overall mission of the Strategic Plan is to

take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of the utilization of genetic resources are shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary approach.²⁴

This mission, and the corresponding Aichi Biodiversity Targets, currently provide the overarching framework for international efforts to reduce biodiversity loss under the CBD and, to a large extent, under other biodiversity-related agreements. They should also be seen within the context of the Sustainable Development Goals, particularly SDG 15 to '[p]rotect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss'.²⁵

While the CBD provides the most comprehensive framework to address biodiversity loss, international legal regulation in this field has developed in a piecemeal and ad hoc manner. Classifying and arranging biodiversity conservation agreements into a coherent structure

¹⁸ See Chapter 14, pp. 657–81. ¹⁹ See the discussion of the Cartagena Protocol on Biosafety at pp. 397–403.

²⁰ This notion of integrating biodiversity considerations into other policy areas is reflected in Principle 4 of the Stockholm Declaration.

²¹ Decision VI/26, Annex, para. 11.

²² Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3*, 17.

²³ UNEP/CBD/COP.DEC/X/2, 29 October 2010. ²⁴ Decision X/2, Annex, para. 12.

²⁵ UN General Assembly Resolution 70/1, *Transforming Our World: the 2030 Sustainable Development Agenda*, UN Doc. A/RES/70/1, 21 October 2015. SDG 14, on oceans, seas and marine resources, is addressed in Chapter 11, p. 550. SDG 15 incorporates a number of more specific targets and timetables for implementation (see Targets 15.1–15.9).

therefore provides something of a challenge. Political will, competing interests and the availability of resources determine the extent to which different aspects of the conservation and sustainable use of biodiversity become the subject of specific regulation at the global level. Thus, for example, twenty-five years after the 1992 UNCED, there is still no global legally binding treaty addressing the conservation and sustainable use of forests in a comprehensive manner.²⁶ Coverage of regional instruments addressing biodiversity remains patchy and incomplete – a number of the regional instruments discussed in this chapter have not entered into force. The issue of the relationships between, and cooperation among, various biodiversity-related agreements has been a matter of debate since the negotiation of the CBD.²⁷ More broadly, given the interdependence of species, habitats and ecosystems, and the range of direct and indirect drivers of biodiversity loss mentioned above, international agreements in other fields, including other environmental agreements addressed in this book, have impacts on the achievement of international biodiversity policy objectives. Measures to protect the atmosphere, the marine environment and freshwater resources may also benefit biodiversity, as will those adopted to address hazardous substances and waste. At the same time, measures to address other environmental issues, such as climate change, need to be designed so as to prevent or minimise adverse effects on biodiversity.

The remainder of the chapter is structured as follows. The first part addresses the 1992 CBD itself, as well as its two Protocols, the 2000 Cartagena Protocol on Biosafety²⁸ and the 2010 Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing. The second part outlines the other principal global biodiversity-related treaties. These include treaties that address particular species, habitats, and threats to biodiversity. The third part discusses other treaties and instruments that address the conservation of particular habitat or species types, including forests; soil and land degradation; birds; specific animal species; and plants.²⁹ Finally, the fourth part addresses treaties and instruments that are applicable to all species and habitats within a particular region or subregion.³⁰

CONVENTION ON BIOLOGICAL DIVERSITY AND ITS PROTOCOLS

1992 Convention on Biological Diversity

The 1992 CBD was negotiated under the auspices of UNEP and signed by 153 states and the EU at UNCED in June 1992.³¹ It sets out provisions aimed at the comprehensive conservation and sustainable use of biological diversity, reflecting objectives of the 1980 World Conservation

²⁶ See further pp. 428–31.

²⁷ See e.g. R. Caddell, 'The Integration of Multilateral Environmental Agreements: Lessons from the Biodiversity-Related Conventions', 22 *Yearbook of International Environmental Law* 37 (2011).

²⁸ The 2010 Supplementary Protocol on Liability and Redress is addressed in Chapter 16, pp. 797–9.

²⁹ In principle, this category would also include instruments addressing marine biological diversity, including fish stocks and marine mammals. These are addressed separately in Chapter 11, pp. 506–64. Also included in this category are international efforts to address the protection of cultural and natural heritage.

³⁰ For a more detailed account of some of the treaties discussed in this chapter, see M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn). For a detailed thematic analysis of international law in relation to biodiversity, see A. Gillespie, *Conservation, Biodiversity and International Law* (2011).

³¹ Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 ILM 822 (1992). As at 28 February 2017, the Convention had 196 parties; see www.biodiv.org

Strategy. In 1984, IUCN prepared principles for the conservation of wild genetic resources. Three years later, IUCN submitted draft legal Articles on a proposed convention to a UNEP Ad Hoc Working Group of Experts on Biological Diversity, and the following year, in 1988, the seventeenth General Assembly of the IUCN endorsed the proposal for a convention. At this early stage, the IUCN draft had been concerned solely with conservation and financing mechanisms, and it was the UNEP Governing Council decision to press ahead with a convention, and to establish a Working Group of Legal and Technical Experts which led to a broadening of the Convention's scope. The Working Group was renamed the Intergovernmental Negotiating Committee and, as such, it met seven times in 1991 and 1992.

At the time the CBD was negotiated, a number of global biodiversity-related conventions were already in place,³² and it might have been expected that the new convention would be designed so as to subsume or replace them. However, this was not the case, and the CBD now coexists with pre-existing global agreements. Since the CBD entered into force, various initiatives have been developed to foster cooperation between the CBD and other biodiversity-related conventions. Today, the CBD's approach and strategic objectives, reflected in the 2011–20 Strategic Plan and the Aichi Biodiversity targets, provide an overarching framework for action on biodiversity, but the other agreements still maintain their autonomous existence and fields of operation.

Objectives

The Biodiversity Convention has three objectives:

the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.³³

The provisions on genetic resources and benefit-sharing were novel and, for some developed countries, they proved problematic because they go beyond conservation and establish rules on the access to and use of genetic resources and on the use of biotechnology. It was the latter two issues, together with the rules on financial resources, which led the United States, alone among the industrialised nations, to decide against signing the Convention at UNCED.³⁴

Preamble and Jurisdictional Scope

The Preamble to the Biodiversity Convention affirms that the conservation of biological diversity is 'a common concern of humankind', that states have 'sovereign rights over their own biological

³² See, in particular, discussions in this chapter, pp. 409–24, of the Convention on International Trade in Endangered Species, the Ramsar Convention on Wetlands, the Bonn Convention on Migratory Species, and the World Heritage Convention.

³³ Art. 1. 'Biological diversity' is defined in Art. 2 as 'the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'.

³⁴ US Declaration made at the UNEP Conference for the Adoption of the Agreed Text of the CBD, 22 May 1992, 21 ILM 848 (1992). On 4 June 1993, the USA signed the Convention but it has not yet ratified it.

resources', and that they are 'responsible for conserving their biological diversity and for using their biological resources in a sustainable manner'. Without expressly endorsing the precautionary approach, the Preamble provides that, where there is a threat of significant reduction or loss of biodiversity, measures should not be avoided or postponed where there is a lack of full scientific certainty, and that biodiversity should be conserved and sustainably used for the benefit of present and future generations. The Convention incorporates Principle 21 of the Stockholm Declaration into the operational part of its text rather than merely the preambular section.³⁵

With regard to components of biodiversity, the Convention applies within the limits of national jurisdiction.³⁶ For processes and activities carried out under the jurisdiction or control of a party, however, the Convention applies within areas of national jurisdiction or beyond the limits of national jurisdiction, regardless of where the effects of such processes and activities occur.³⁷

Conservation and Sustainable Use

Under Article 5, all parties must cooperate for the conservation and sustainable use of biodiversity, in respect of areas beyond national jurisdiction and on other matters of mutual interest.³⁸ Parties must develop national strategies, plans or programmes for the conservation and sustainable use of biodiversity, or adapt existing strategies, plans or programmes, and integrate, wherever possible and appropriate, the conservation and sustainable use of biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies.³⁹ By early 2017, 189 parties to the Convention had adopted national biodiversity strategies and actions plans (NBSAPs). Of these, 123 parties submitted revised NBSAPs in the period since 2011 to reflect the Convention's Strategic Plan for 2011–20 and the Aichi Biodiversity Targets.⁴⁰ Many developing countries prepared their NBSAPs with support from the Global Environment Facility, under the Convention's provisions on financial resources. However, the challenge of implementing strategies and actions plans remains. It has also been widely recognised that insufficient progress has been made in integrating biodiversity considerations into other sectoral or cross-sectoral programmes and policies.

It is notable that, unlike earlier biodiversity-related conventions, the CBD does not incorporate any global list of species or habitats that are to be subject to particular measures of protection or that are recognised as important for conservation and sustainable use. Such proposals were dropped during the negotiations following opposition from developing countries. Instead, each party is required, as far as possible and as appropriate: to identify components of biodiversity important for conservation and sustainable use; to monitor these components while paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use; and to identify, and monitor the effects of, processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biodiversity.⁴¹ Where a significant adverse effect has been

³⁵ Art. 3; see further Chapter 6, pp. 206ff.

³⁶ Art. 4(a). See discussion of biodiversity in marine protected areas beyond national jurisdiction, Chapter 11, pp. 562–4.

³⁷ Art. 4(b). ³⁸ Art. 5. For the definition of 'sustainable use' in Art. 2, see Chapter 6, pp. 222–5. ³⁹ Art. 6.

⁴⁰ See pp. 407–8. ⁴¹ Art. 7.

determined, the processes or activities must be regulated or managed. For these purposes, Annex I sets forth the following indicative list of categories of ecosystems or habitats for identification and monitoring:

- those containing a high level of diversity, large numbers of endemic or threatened species, or wilderness;
- those required by migratory species;
- those of social, economic, cultural or scientific importance; and
- those which are representative, unique or associated with key evolutionary or other biological processes.

Species and communities to be identified and monitored are:

- threatened, wild relatives of domesticated or cultivated species;
- those of medicinal, agricultural or other economic value, or of social, scientific or cultural importance; and
- those of importance for research into the conservation and sustainable use of biological diversity.

More detailed rules exist for *in situ*⁴² and *ex situ* conservation. The Convention addresses *in situ* conservation in Article 8. Many of the provisions of this Article reflect the regulatory techniques included in some of the pre-existing conservation treaties, but some novel issues are also addressed. In relation to *in situ* conservation, each party undertakes, as far as possible and as appropriate, to establish a system of protected areas or areas where special measures are needed, and to develop guidelines for the selection, establishment and management of such areas.⁴³ The establishment of protected areas is among the most widely and long-used conservation techniques.⁴⁴ While protected areas are acknowledged as critical components of conservation and sustainable use policy, a number of factors need to be taken into account to ensure positive impacts. Traditionally, boundaries of protected areas often follow a political rather than an ecological course; many such areas are too small to be effective; and conflicts may arise with competing uses of the area and its resources by local communities. Other factors limiting the effectiveness of protected areas include the effects of activities taking place outside the protected areas, ineffective management and insufficient funding. The relative failure of international efforts in this regard has spurred new approaches, including the establishment of 'buffer zones' around protected areas, which may be subject to special regulation,⁴⁵ and efforts to establish networks of protected areas

⁴² 'In situ conservation' is defined in Art. 2 as 'the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties'.

⁴³ Art. 8(a) and (b). See generally A. Gillespie, *Protected Areas in International Environmental Law* (2007).

⁴⁴ Article 2 of the Biodiversity Convention defines a 'protected area' as 'a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives'. The definition of a protected area adopted by IUCN is 'a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural value'. See N. Dudley (ed.), *Guidelines for Applying Protected Areas Management Categories* (IUCN, 2008), pp. 8-9; and the World Database on Protected Areas, www.protectedplanet.net

⁴⁵ See Art. 8(e).

and transboundary protected areas.⁴⁶ The 2011–20 Strategic Plan includes specific targets for global protected areas coverage. Aichi Target 11 provides that:

by 2020, at least 17% of terrestrial and inland water, and at least 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.⁴⁷

While this is a more specific target, as compared to others in the Strategic Plan, it should be noted that, like the other Aichi Targets, it does not impose any commitment upon individual parties. Instead, the Conference of the Parties has urged parties to develop national and regional targets with a view to contributing to efforts to reach the global targets.⁴⁸

While protected areas may play an important role in *in situ* conservation, the Convention also requires that parties regulate and manage biological resources important for conservation and sustainable use of biological diversity whether within or outside protected areas,⁴⁹ and promote the protection of ecosystems, natural habitats and the maintenance of viable populations.⁵⁰

Parties must establish or maintain the means to regulate, manage or control risks associated with the use and release of living modified organisms (LMOs) resulting from biotechnology which are likely to have adverse environmental impacts, and to prevent the introduction of or to control or eradicate alien species which threaten ecosystems, habitats or species.⁵¹ As noted in the introduction, alien invasive species have been identified as one of the key threats to biodiversity.

Article 8 also requires that, subject to national legislation, each party is to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles.⁵² This provision reflects the important role of indigenous and local communities in the conservation and sustainable use of biodiversity, but its domestic implementation raises challenging questions. Initially, this issue was considered mainly in the context of the Convention's provisions on access to genetic resources and benefit sharing, and in relation to mechanisms for the proper protection of traditional knowledge associated with biodiversity held by such communities.⁵³ However, it has a much wider relevance across the range of issues addressed by the CBD.

⁴⁶ The Conference of the Parties to the Biodiversity Convention adopted a programme of work on protected areas in Decision VII/28. In relation to protected areas, see also UNESCO's Man and Biosphere programme, which provides for the establishment of 'biosphere reserves' of which there are now 669 globally (as at 28 February 2017). See www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves. The Man and Biosphere programme also provides for regional and subregional collaboration in transboundary reserves; see, for example, A. Michelot, with B. Ouedraogo, *Transboundary Protected Areas: Legal Framework for the W Transboundary Reserve (Benin, Burkina Faso, Niger)*, IUCN Environmental Policy and Law Paper No. 81 (2009).

⁴⁷ Decision X/2, Annex. ⁴⁸ Decision X/2, para. 3(b). ⁴⁹ Art. 8(c). ⁵⁰ Art. 8(d). ⁵¹ Art. 8(g) and (h). ⁵² Art. 8(j).

⁵³ In May 1998, the fourth meeting of the Conference of the Parties established an ad hoc working group on Art. 8(j) to provide advice on forms of protection for traditional knowledge and to develop a programme of work for implementation at the national and international levels (see Decision IV/9, para. 1). See also the text and accompanying notes on access to genetic resources and benefit sharing at pp. 394–6 and on the Nagoya Protocol at pp. 403–4.

Ex situ conservation is predominantly to be complementary to *in situ* conservation.⁵⁴ Each party must take measures that will conserve components of biological diversity; establish and maintain facilities for conservation of and research on plants, animals and micro-organisms; and ensure the recovery and rehabilitation of threatened species and their reintroduction into natural habitats under appropriate conditions.⁵⁵

The Convention requires parties, as far as possible and as appropriate, to adopt measures in relation to the sustainable use of components of biodiversity, and the Conference of the Parties has adopted further guidelines on sustainable use.⁵⁶ Article 14 requires parties, as far as possible and as appropriate, *inter alia*, to:

introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures.⁵⁷

In the *Nicaragua v. Costa Rica* case concerning the construction of a road in the border area, the ICJ found that this provision does not create an obligation to carry out an environmental impact assessment before undertaking an activity that may have significant adverse effects on biological diversity. Thus, it was not established that Costa Rica breached Article 14 of the CBD by failing to conduct an environmental impact assessment for its road project.⁵⁸

The Convention provides for notification, exchange of information and consultation on activities likely to have a significant adverse effect on the biological diversity of other states or areas beyond national jurisdiction. Notification is required in cases of imminent or grave danger or damage, and emergency responses must be promoted for activities or events that present a grave and imminent danger to biodiversity.⁵⁹ Under Article 14(2), the Conference of the Parties is to examine the development of rules on liability and redress, for damage to biological diversity, including restoration and compensation.⁶⁰

A notable feature of the CBD provisions discussed above concerning identification and monitoring (Article 7), *in situ* and *ex situ* conservation (Article 8), sustainable use (Article 10) and impact assessment (Article 14(1)) is that all are qualified by the phrase 'as far as possible and as appropriate'. The obligations to develop national biodiversity strategies and actions plans and to integrate biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies under

⁵⁴ '*Ex situ* conservation' is defined in Art. 2 as 'the conservation of components of biological diversity outside their natural habitats'.

⁵⁵ Art. 9(a), (b) and (c).

⁵⁶ Art. 10, and see Decision VII/12 (Addis Ababa Principles and Guidelines for the sustainable use of biodiversity).

⁵⁷ Article 14(1).

⁵⁸ Nicaragua argued that Costa Rica was required to carry out an environmental impact assessment by Article 14 of the CBD. Costa Rica countered that the provision of Article 14 concerned only the introduction of appropriate procedures with respect to projects that were likely to have a significant adverse effect on biological diversity. Costa Rica claimed that it had such procedures in place, but that, in any event, they did not apply in this case as the construction of the road in question was not likely to have a significant adverse effect on biological diversity. *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua); Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, Judgment of 16 December 2015, paras. 163–4. The Court did find that Costa Rica had failed to comply with its obligation to carry out an EIA under general international law. See Chapter 14, pp. 657–81.

⁵⁹ Art. 14(1)(c)–(e).

⁶⁰ By Decision VI/11, at its sixth meeting, the Conference of the Parties requested the Secretariat to convene a group of legal and technical experts to review information related to aspects of Art. 14(2). The most recent decision on this issue is Decision IX/23.

Article 6 are to be undertaken in accordance with each party's 'particular conditions and capabilities'. The qualified nature of these provisions leaves parties significant discretion in terms of action to be taken at the national level, and make it difficult to pinpoint the nature and scope of their legal obligations under these provisions. This has led to criticism of the soft character of the obligations imposed by the CBD, particularly as regards conservation and sustainable use.

Access to Genetic Resources and Benefit Sharing

The Convention included then novel international rules on access to genetic resources, access to and transfer of technology, and the handling of biotechnology and the distribution of its benefits. These were controversial to the extent that they were perceived by some countries to threaten the stability of existing intellectual and other property rights. The context for the negotiation of Article 15 was the concern among developing countries that developed country corporations and institutions could obtain biological resources for scientific research, and potentially for commercial development, without the consent of provider countries and without committing to share any benefits deriving from the access to and any utilisation of those resources. Examples of commercially valuable pharmaceuticals developed from natural products exacerbated these concerns,⁶¹ which were further heightened by the possibility that traditional knowledge held by local and indigenous communities might be used as a basis for the initial identification of potentially useful genetic resources. Against this background, Article 15 of the Convention recognises the sovereign rights of states over natural resources, and provides that the authority to determine access to genetic resources rests with national governments and is subject to national legislation.⁶² Such access is to be on mutually agreed terms, and subject to the prior informed consent of the party providing such resources.⁶³ In essence, these provisions require consideration of benefit sharing arrangements before access to genetic resources is granted. Parties are also to take measures with the aim of sharing in a fair and equitable way benefits arising from the commercial or other use of genetic resources with the party that has provided such resources, suggesting an onus on 'user' countries to support the access and benefit sharing arrangements of 'providers'.⁶⁴ The provisions of Article 15 are not intended to impede access to genetic resources: each party is to facilitate access to genetic resources for environmentally sound uses by other parties, and must not impose restrictions that run counter to the Convention's objectives.⁶⁵ Article 15(2) provides that genetic resources referred to in Articles 15, 16 and 19 are 'only those that are provided by Contracting Parties that are countries of origin of such resources or by Parties that have acquired the genetic resources in accordance with this Convention'. Thus, the provisions on access and benefit sharing do not apply to genetic resources acquired before the Convention's entry into force.

Article 16 establishes rules on access for and transfer between parties of technologies, including biotechnologies, relevant to the conservation and sustainable use of biodiversity or which make use of genetic resources and do not cause significant damage to the environment. Access to and transfer of technology is to be on 'fair and most favourable terms'. Where

⁶¹ For example, ten Kate and Laird reported that, in 1997, taxol, a drug developed from the Pacific yew tree, *Taxus brevifolia*, was the thirtieth top-selling drug in the world with sales of \$941 million USD. The original collections of *Taxus brevifolia* were made in the 1960s in the Pacific Northwest of the United States. K. ten Kate and S. Laird, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit Sharing* (1999), 73.

⁶² Art. 15(1). ⁶³ Art. 15(4) and (5). ⁶⁴ Art. 15(7). ⁶⁵ Art. 15(2).

technology is subject to patent and other intellectual property rights, access and transfer are to be provided on terms that recognise and are consistent with the adequate and effective protection of intellectual property rights.⁶⁶ Under Article 16(3), parties are required to take measures to give those parties which provide genetic resources, particularly developing countries, access to technology (including technologies protected by patent and other intellectual property rights) which makes use of those resources, on mutually agreed terms and in accordance with international law. This suggests that additional measures are required to ensure that parties' private sectors facilitate access to, joint development of, and transfer of these technologies for the benefit of governmental institutions and the private sectors of developing countries.⁶⁷ They must cooperate, subject to national legislation and international law, to ensure that patents and other intellectual property rights 'are supportive of and do not run counter to' the objectives of the Convention.⁶⁸ Regarding the relationship between the Convention and other international conventions, including those relating to patents and other intellectual property rights, the Convention

shall not affect the rights and obligations of any contracting party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.⁶⁹

The language used is sufficiently broad to allow an interpretation that the Convention could, in certain circumstances, prevail over patent and intellectual property rights protected by other international agreements.⁷⁰

Given the novelty of the provisions of Articles 15 and 16 of the Convention, the Conference of the Parties moved to develop further guidance on their implementation, with developing countries particularly keen to ensure that the Convention's provisions were elaborated and clarified. Particular uncertainty and controversies surrounded mechanisms for the implementation and enforcement of the provisions of Article 15. For example: how could countries of origin of genetic resources regulate access and ensure benefit sharing, especially once such resources had been taken from their territory? What role should countries using genetic resources play in the implementation and enforcement of access and benefit sharing arrangements? What was the relationship between access and benefit sharing and intellectual property regimes? How should traditional knowledge related to genetic resources be protected, and benefits be shared with holders of such knowledge?⁷¹ While a number of examples of national legislation and contractual arrangements emerged, there were strong calls for more detailed and binding international rules.

In 2002, the sixth meeting of the Conference of the Parties adopted the 'Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of Their Utilization, Access and Benefit Sharing', to assist parties in developing an overall access and benefit-sharing strategy, and in identifying the steps involved in the process of obtaining

⁶⁶ Art. 16(2). ⁶⁷ Art. 16(4). ⁶⁸ Art. 16(5). ⁶⁹ Art. 22(1).

⁷⁰ For a discussion of the concerns of the United States on these provisions, see M. Chandler, 'The Biodiversity Convention: Selected Issues of Interest to the International Lawyer', 4 *Colorado Journal of International Law and Policy* 141 (1993).

⁷¹ See Art. 8(j).

access to genetic resources and sharing benefits.⁷² The Bonn Guidelines addressed: roles and responsibilities in access and benefit sharing; participation of stakeholders; steps in the access and benefit-sharing process, including in relation to prior informed consent and mutually agreed terms; and other provisions, including in relation to incentives, accountability, monitoring, verification and settlement of disputes. The Bonn Guidelines were explicitly stated to be voluntary.⁷³ While they were recognised as a useful step in advancing international rules on access and benefit sharing, already in 2002 there were demands for the development of additional legally binding measures. At the Johannesburg World Summit for Sustainable Development, governments called for the elaboration of an international regime on benefit sharing.⁷⁴ In 2004, the parties to the CBD initiated⁷⁵ the further negotiations that led, in October 2010, to the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.⁷⁶ The development of rules on access to genetic resources under the Convention should also be seen in the context of the evolution of the International Treaty on Plant Genetic Resources for Food and Agriculture.⁷⁷

Biotechnology and Living Modified Organisms

The regulation of genetically modified organisms and biotechnology has been among the most contentious issues addressed by the CBD, and was the cause of considerable difficulties during the negotiation of the Biodiversity Convention, and after its adoption and entry into force. The main issue was the appropriate balance to be struck between the objectives of ensuring, on the one hand, that developments in the field of biotechnology do not cause adverse effects for human health and the environment and, on the other hand, that new international regulatory arrangements do not place undue limits on the development, dissemination and use of biotechnology. The concern expressed about excessive regulation was reflected in the written statement submitted by the United States at UNCED, specifically in reference to Chapter 16 of Agenda 21, which set out its understanding that 'biotechnology is in no way an intrinsically unsafe process'.⁷⁸ As noted above, Article 8(g) of the Convention, in relation to *in situ* conservation, provides that parties shall, as far as possible and as appropriate, establish or maintain means to regulate, manage and control risks associated with the use and release of living modified organisms (LMOs) resulting from biotechnology. In relation to transboundary movement of LMOs, the Convention requires each party to provide to any other party into whose territory living modified organisms are to be introduced any available information on the use and safety regulations it requires in handling living modified organisms, and on the potential adverse impact of the specific organisms concerned. Article 19(3) requires parties to 'consider the need for and modalities of a protocol setting out appropriate procedures, including ... advance informed agreement, for the safe transfer, handling and use of [LMOs] resulting from biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity'.⁷⁹ At its second meeting in 1995, the Conference of the Parties established an

⁷² Decision VI/24, Section A, Annex, para. 12. ⁷³ Decision VI/24, Section A, Annex, para. 7.

⁷⁴ Plan of Implementation of the World Summit on Sustainable Development, para. 44(o), A/CONF.199/20/Corr.1.

⁷⁵ Decision VII/19.

⁷⁶ Decision X/1. The Nagoya Protocol was opened for signature on 2 February 2011, and entered into force on 12 October 2014. See further pp. 403–4.

⁷⁷ See pp. 424–7. ⁷⁸ Report of UNCED, A/CONF.151/26/Rev.1 (vol. II), 19 (1993). ⁷⁹ Art. 19(3).

Open-Ended Ad Hoc Working Group on Biosafety to negotiate a protocol.⁸⁰ While the negotiations were fraught with difficulty, the Conference of the Parties eventually adopted the Cartagena Protocol on Biosafety in January 2000, and it entered into force in September 2003.⁸¹

Financial Resources

Articles 20 and 21 provide for the provision of financial resources and establish a financial mechanism to provide new and additional financial resources to enable developing country parties to meet the agreed full incremental costs to them of implementing the Convention. The Convention's financial mechanism is operated by the Global Environment Facility.

Institutions and Other Mechanisms

The institutional arrangements to oversee implementation of the CBD comprise the Conference of the Parties, which keeps the implementation of the Convention under review;⁸² a Subsidiary Body on Scientific, Technical and Technological Advice, to provide scientific, technical and technological advice to the Conference of the Parties;⁸³ a Subsidiary Body on Implementation (SBI); various working groups established on an ad hoc basis; and a secretariat.⁸⁴ The SBI is not provided for in the Convention itself, but was established by the Conference of the Parties in 2014.⁸⁵ The Convention provides for settlement of disputes concerning the interpretation or application of the Convention, including by negotiation, the use of good offices, and mediation. Parties may declare that they accept, as compulsory, arbitration in accordance with the procedures in Part 1 of Annex II to the Convention, and/or submission of disputes to the International Court of Justice. Where parties to a dispute have not accepted the same or any procedure, the dispute is to be submitted to conciliation in accordance with Part 2 of Annex II unless they otherwise agree.⁸⁶ The Convention's dispute settlement provisions have not yet been formally invoked.

Among its other functions, the Conference of the Parties may formulate and adopt protocols to the Convention.⁸⁷ To date, two Protocols have been adopted, addressing biosafety and access to genetic resources and benefit sharing.

2000 Cartagena Protocol on Biosafety

The Cartagena Protocol on Biosafety was adopted on 29 January 2000 and entered into force on 11 September 2003.⁸⁸ Article 1 sets forth its objective:

⁸⁰ Decision II/5. ⁸¹ See pp. 397–403. ⁸² Art. 23. ⁸³ Art. 25.

⁸⁴ Art. 24. Between entry into force of the Convention and the first meeting of the Conference of the Parties, the secretariat was provided by the Executive Director of UNEP (Art. 40).

⁸⁵ Decision XII/26. ⁸⁶ Art. 27. ⁸⁷ Art. 28.

⁸⁸ 39 ILM 1027 (2000), in force 11 September 2003. By 28 February 2017, there were 170 parties to the Cartagena Protocol. See generally R. Mackenzie et al., *An Explanatory Guide to the Cartagena Protocol on Biosafety* (2003); M-C. Cordonnier Segger, F. Perron-Welch and C. Frison (eds.), *Legal Aspects of Implementing the Cartagena Protocol on Biosafety* (2013).

In accordance with the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development, the objective of this Protocol is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.

Parties must ensure that the development, handling, transport, use, transfer and release of any living modified organisms are undertaken in a manner that prevents or reduces the risks to biological diversity, taking also into account risks to human health.⁸⁹ They are free to take action that is more protective of biological diversity provided that such action 'is consistent with the objective and the provisions of [the] Protocol and is in accordance with [the] Party's other obligations under international law'.⁹⁰

The Biosafety Protocol applies to 'the transboundary movement, transit, handling and use of all living modified organisms that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health' (Article 4). However, LMOs which are pharmaceuticals for humans are excluded from the Protocol's scope if they are covered by another international arrangement or agreement.

The Preamble reaffirms the parties' commitment to the 'precautionary approach' contained in Principle 15 of the Rio Declaration, expresses their awareness of growing public concern over potential adverse effects on biological diversity and human health, and recognises the 'great potential' of biotechnology. Given that the Protocol controls the transboundary movement, including trade, of LMOs, the relationship with parties' obligations under international trade agreements⁹¹ was a matter of great controversy during the negotiations. Reflecting the lack of consensus on this point, the Protocol's Preamble contains three paragraphs that do not conclusively settle the question:

Recognizing that trade and environment agreements should be mutually supportive with a view to achieving sustainable development,

Emphasizing that this Protocol shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreements,

Understanding that the above recital is not intended to subordinate this Protocol to other international agreements.

The central regulatory mechanism established by the Protocol is the advance informed agreement (AIA) procedure. This procedure applies to the first intentional transboundary movement of an LMO into a party of import for intentional introduction into the environment of that party. The scope of the AIA procedure was the subject of intense negotiation

⁸⁹ Art. 2(1) and (2). ⁹⁰ Art. 2(4).

⁹¹ The relationship between the Cartagena Protocol and the WTO agreements was raised in the *EC - Biotech Products* case in the WTO, but was not addressed in substance by the panel given that the complainants, United States, Canada and Argentina, were not parties to the Protocol. See further, Chapter 18, pp. 879-81.

during the elaboration of the Protocol. The Protocol provides that the procedure does not apply to LMOs in transit⁹² or to LMOs destined for 'contained use' in the party of import.⁹³ Significantly, in addition, the AIA procedure does not apply to LMOs 'intended for direct use as food or feed, or for processing' (LMO-FFPs).⁹⁴ This exclusion removes from the Protocol's AIA procedure, *inter alia*, shipments of grains from genetically modified crops, which might otherwise fulfil the definition of an LMO in the Protocol. Such shipments are subject to a specific procedure in Article 11 of the Protocol. Finally, the Protocol's governing body may decide to exempt from the AIA procedure other LMOs identified as not likely to have adverse effects on the conservation and sustainable use of biodiversity, taking also into account risks to human health.⁹⁵

Under the AIA procedure, prior to the first intentional transboundary movement of an LMO, the party of export or the exporter must notify the national authority of the importing party.⁹⁶ The party of export must ensure that there is a legal requirement for the accuracy of information provided by the exporter.⁹⁷ On receipt of the notification, the importing party must provide a written acknowledgment to the notifier within ninety days, informing the notifier whether to proceed in accordance with the domestic regulatory framework of the importing party (which must be consistent with the Protocol) or with the decision procedure specified in Article 10.⁹⁸ If the importing party proceeds in accordance with Article 10, it must inform the notifier, in writing, within ninety days of the receipt of the initial notification, whether the intentional transboundary movement may proceed: (a) only after the importing party has given its written consent; or (b) after no less than ninety days without a subsequent written consent.⁹⁹ If the importing party informs the notifier that import can only proceed with the importing party's consent, the importing party has a period of 270 days from the initial notification in which to make a decision on import. The decision must be notified to the exporter and to the Biosafety Clearing-House established as part of the clearing-house mechanism under Article 18(3) of the Protocol.¹⁰⁰ Before making a decision on import of an LMO, the importing party must ensure that a risk assessment is carried out 'in a scientifically sound manner, in accordance with Annex III and taking into account recognised risk assessment techniques'.¹⁰¹ Following the risk assessment, the importing party may approve the import, with or without conditions, or may prohibit it. The importing party may also request additional relevant information in accordance with its domestic regulatory framework or Annex I, or extend the decision-making period by a defined period

⁹² Art. 6(1). Parties may nonetheless decide to regulate the transit of LMOs through their territory.

⁹³ Art. 6(2). 'Contained use' is defined in Art. 3(b) as 'any operation, undertaken within a facility, installation or other physical structure, which involves living modified organisms that are controlled by specific measures that effectively limit their contact with, and their impact on, the external environment'. Parties are nonetheless entitled to subject LMOs destined for contained use to risk assessment prior to import and to set standards for contained use within their jurisdiction.

⁹⁴ Art. 7(2). ⁹⁵ Art. 7(4). This power has not been exercised to date.

⁹⁶ Pursuant to Art. 19(1), each party must designate one or more competent national authorities. The information includes, *inter alia*, contact details for the exporter and importer, the name and identity of the LMO and its genetic characteristics, a description of the modification, details of the intended use of the LMO and suggested methods for safe handling, storage, transport and use of the LMO.

⁹⁷ Art. 8. ⁹⁸ Art. 9(1)–(3). ⁹⁹ Art. 10(2). ¹⁰⁰ Art. 10(3).

¹⁰¹ Art. 15(1). Annex III sets forth general principles of risk assessment, the methodology to be used and points to consider in the assessment. The risk assessment may be undertaken by the importing party, or the exporter can be required to carry out the risk assessment (Art. 15(2) and (3)).

of time.¹⁰² Provision is made for the application of a precautionary approach by the importing party in Article 10(6), which provides:

Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of the living modified organism in question . . . in order to avoid or minimize such potential adverse effects.

While this allows for precaution in the context of decision-making on imports, it has been suggested that the provision is limited in so far, inter alia, that the reference to the ‘extent of potential adverse effects’ suggests that the pathways by which the LMOs in question could cause harm is not in doubt.¹⁰³

An alternative decision-making procedure applies in respect of LMO-FFPs. Under Article 11, parties taking a final decision regarding domestic use, including placing on the market, of an LMO that may be subject to transboundary movement for direct use as food or feed, or for processing, are required to inform other parties through the Biosafety Clearing-House within fifteen days of making the decision. A party may take decisions on the import of LMO-FFPs in accordance with its domestic regulatory framework, provided this framework is consistent with the objective of the Protocol.¹⁰⁴ Alternatively, developing country parties, or parties with economies in transition, which lack a domestic regulatory framework, may declare through the Biosafety Clearing-House that decisions prior to the first import of an LMO-FFP will be taken following a risk assessment undertaken in accordance with Annex III and within a predictable timeframe, not exceeding 270 days.¹⁰⁵ Again, lack of scientific certainty will not prevent a party from taking a decision designed to avoid or minimise the potential adverse effects of the LMO-FFP on the environment or human health.¹⁰⁶

Article 26 allows parties, in making decisions on the import of LMOs, to take into account ‘socio-economic considerations’ arising from the impact of LMOs on the conservation and sustainable use of biological diversity, provided such consideration is consistent with the party’s international obligations.

New scientific evidence permits an importing party to review a previous decision regarding an intentional transboundary movement. The revised decision and accompanying reasons must be notified to any exporters that have previously notified movements of the LMO referred to in the decision, as well as to the Biosafety Clearing-House.¹⁰⁷ A party of export or a notifier may also seek a review of an importing party’s decision in respect of an LMO import if it considers that a change in circumstances has occurred that may influence the outcome of the risk assessment upon which the decision was based or if additional relevant scientific or technical information has become available.¹⁰⁸

Article 14 of the Protocol permits parties to enter into bilateral, regional and multilateral agreements and arrangements regarding intentional transboundary movements of LMOs which

¹⁰² Art. 10(3).

¹⁰³ J. Peel, *Science and Risk Regulation in International Law* (Cambridge: Cambridge University Press, 2010), 305.

¹⁰⁴ Art. 11(4). ¹⁰⁵ Art. 11(6). ¹⁰⁶ Art. 11(8). ¹⁰⁷ Art. 12(1). ¹⁰⁸ Art. 12(2).

are consistent with the objective of the Protocol and do not result in a lower level of protection than that provided for by the Protocol. This would appear to include, for example, regulatory arrangements within the EU applicable to LMOs. The Protocol does not prohibit transboundary movements of LMOs between parties and non-parties, provided they are 'consistent with the objective' of the Protocol.¹⁰⁹ Parties may enter into bilateral, regional and multilateral agreements and arrangements with non-parties regarding such transboundary movements of LMOs.¹¹⁰ Parties entering into bilateral agreements with non-parties are required, however, to 'encourage' non-parties to adhere to the Protocol and to contribute appropriate information to the Biosafety Clearing-House on LMOs released in, or moved into or out of, areas within their national jurisdictions.¹¹¹ The issue of trade with non-parties was a significant factor in negotiations as the United States is not a party to the CBD and thus cannot become a party to the Cartagena Protocol. It was also anticipated that other major exporters of LMOs and/or LMO-FFPs might not join the Protocol. The provisions of Article 24 are relevant to the present situation of a state such as Mexico that is party to the Protocol, while also a member of the North American Free Trade Agreement with two non-parties, Canada and the United States. The difficulty of the Protocol's provisions on trade with non-parties lies in determining in what precise circumstances transboundary movements of LMOs will be deemed 'consistent with the objective' of the Protocol.

Where risks to biological diversity or human health are identified in the risk assessment process under the Protocol, the parties agree to establish and maintain appropriate mechanisms, measures and strategies to regulate, manage and control those risks.¹¹² Measures based on risk assessment must be imposed 'to the extent necessary to prevent adverse effects of the living modified organism on the conservation and sustainable use of biological diversity, taking also into account risks to human health, within the territory of the Party of import'.¹¹³

Article 18 requires parties to take the necessary measures to require that LMOs that are subject to intentional transboundary movement within the scope of the Protocol are handled, packaged and transported under conditions of safety, taking into consideration relevant international rules and standards.¹¹⁴ During the negotiations for the Protocol, the most controversial aspect of Article 18 was its provisions relating to documentation requirements for exports of various types of LMOs, particularly LMO-FFPs. The compromise agreed upon provides for parties to require that documentation accompanying LMO-FFPs clearly identifies that they 'may contain' living modified organisms.¹¹⁵ The Meeting of the Parties was required to take a decision on detailed requirements for this purpose within two years of the Protocol's entry into force.¹¹⁶

Article 20 establishes the Biosafety Clearing-House. Its functions are to facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, LMOs, and to assist parties (especially developing countries, countries with economies in transition and countries that are centres of origin and centres of genetic diversity) in implementing the

¹⁰⁹ Art. 24(1). ¹¹⁰ *Ibid.* ¹¹¹ Art. 24(2). ¹¹² Art. 16(1). ¹¹³ Art. 16(2). ¹¹⁴ Art. 18(1).

¹¹⁵ Art. 18(2)(a); on labelling, see Chapter 15, pp. 716–17.

¹¹⁶ This issue was addressed in Decision BS-III/10 of the Conference of the Parties serving as the Meeting of the Parties to the Protocol, in 2006, with a view to adopting a further decision on Art. 18(2)(a) at the sixth Meeting of the Parties. By Decision BS-V/8, this decision was deferred to the seventh Meeting of the Parties. In Decision BS-VII/8, it was decided that a further review of the need for a stand-alone document was not required unless a subsequent meeting of the Parties so decided in the light of the experience gained. In the meantime, parties were requested to continue to take measures in accordance with Decision III/10.

Protocol. Subject to commercial confidentiality requirements (under Article 21), parties must provide the Biosafety Clearing-House with specified information, which is publicly accessible.¹¹⁷ As noted above, the Biosafety Clearing-House plays an important role in the way the Protocol addresses the transboundary movement of LMO-FFPs.

Under Article 17, parties must take appropriate measures to notify affected or potentially affected states, the Biosafety Clearing-House and international organisations of a release that leads, or may lead, to an unintentional transboundary movement of an LMO that is likely to affect biological diversity or human health.¹¹⁸ Under Article 25, transboundary movements of LMOs carried out in contravention of a party's domestic measures implementing the Protocol are deemed to be illegal, and the affected party may request the party of origin to dispose of the LMO in question by repatriation or destruction, as appropriate.¹¹⁹

The limited capacity of developing countries with respect to known and potential risks associated with LMOs was an important factor in the adoption of the Protocol. Article 22 requires parties to cooperate in the development and/or strengthening of human resources and institutional capacities in biosafety within developing countries. Financial assistance may be provided for capacity-building through the financial mechanism established under Article 21 of the Convention, and the needs of parties with economies in transition are also to be taken into account for capacity-building.¹²⁰

Another extremely controversial issue in the negotiation of the Protocol was the question of liability and redress for any damage caused by LMOs. Most developing states wished to have provisions on liability and redress included within the text of the Protocol. Opposition from most developed states, and the complexity of the issue, resulted in a form of enabling provision being included in the Protocol. Article 27 required the first Meeting of the Parties to adopt 'a process with respect to the appropriate elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms'. This formulation appeared to leave open a number of important issues, such as the scope of such rules and procedures and their legal form. The first Meeting of the Parties set out a mandate for an open ended ad hoc working group of legal and technical experts to address the issue,¹²¹ and, in 2010, the fifth Meeting of the Parties to the Protocol adopted the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress.¹²² A full discussion of the Liability Protocol is deferred to Chapter 16.

The Protocol utilises the institutional arrangements established under the Biodiversity Convention, with the Conference of the Parties serving as the Meeting of the Parties to the Protocol.¹²³ The Meeting of the Parties is to keep the implementation of the Protocol under regular review and may consider and adopt, as required, amendments to the Protocol and its Annexes, as well as any additional Annexes, which are deemed necessary for the implementation

¹¹⁷ Art. 20(3). See <http://bch.cbd.int> ¹¹⁸ Art. 17(1). ¹¹⁹ Art. 25(1) and (2).

¹²⁰ Art. 22(2) (the financial mechanism established in Art. 21 of the Convention is designated as the financial mechanism for the Protocol (Art. 28(2)). The adoption of the Protocol gave rise to a significant focus on capacity-building, with finance through the Global Environment Facility to enable developing countries to develop national biosafety laws and regulations to implement the Protocol.

¹²¹ Decision BS-I/8.

¹²² Decision BS-V/11. See further Chapter 16, pp. 797-9. See also A. Shibata (ed.), *International Liability Regime for Biodiversity Damage: the Nagoya-Kuala Lumpur Supplementary Protocol* (2014).

¹²³ Arts. 29-31.

of the Protocol.¹²⁴ The Protocol required the first Meeting of the Parties to establish a non-compliance mechanism,¹²⁵ and this mechanism was adopted in 2004.¹²⁶

2010 Nagoya Protocol

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization was adopted in 2010 (2010 Nagoya Protocol).¹²⁷ The objective of the Nagoya Protocol is:

the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, and by appropriate funding, thereby contributing to the conservation and sustainable use of biological diversity and the sustainable use of its components.¹²⁸

The Protocol applies to genetic resources within the scope of Article 15 of the CBD, and also to traditional knowledge associated with such resources.¹²⁹ 'Utilization of genetic resources' is defined as 'to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology as defined in Article 2 of the Convention'.¹³⁰ The Protocol restates and elaborates upon some of the principles reflected in Article 15 of the CBD. Benefits arising from utilisation and commercialisation of genetic resources are to be shared, on mutually agreed terms, with countries of origin of such resources or parties that have acquired such resources in accordance with the Convention. Benefit-sharing commitments are also established in relation to indigenous and local communities that hold genetic resources, but only 'in accordance with domestic legislation regarding the established rights of these indigenous and local communities over these genetic resources'. Benefits arising from the use of traditional knowledge associated with genetic resources should also be shared with indigenous and local communities holding such knowledge.¹³¹ As in the Bonn Guidelines, it is recognised that benefits may include both monetary and non-monetary benefits, and an indicative list of such benefits is contained in Annex I to the Protocol. Parties are required to 'encourage' users and providers of genetic resources to direct benefits arising from the utilisation of such resources towards the conservation of biological diversity and the sustainable use of its components.¹³²

¹²⁴ Art. 29(4). ¹²⁵ Art. 34. ¹²⁶ Decision BS-I/7.

¹²⁷ 29 October 2010, in force 12 October 2014, C.N.782.2010, TREATIES.1. By March 2017, there were 93 parties to the Nagoya Protocol and three other states had submitted instruments of accession. See generally E. Morgera, M. Buck and E. Tsioumani (eds.), *The 2010 Nagoya Protocol on Access and Benefit-Sharing in Perspective: Implications for International Law and Implementation Challenges* (2013).

¹²⁸ Art. 1. ¹²⁹ Art. 3. See also Art. 8(j) of the Biodiversity Convention.

¹³⁰ Art. 2(c). Under Art. 2 of the Convention, 'biotechnology' includes technological applications using biological systems, living organisms or *derivatives* thereof to make or modify products or processes for specific use. A 'derivative' is defined in Art. 2(e) of the Protocol as 'a naturally occurring biochemical compound resulting from the genetic expression or metabolism of biological or genetic resources, even if it does not contain functional units of heredity'.

¹³¹ Art. 5(2) and (5). ¹³² Art. 9.

The Protocol provides that parties requiring prior informed consent shall take measures to provide information on how to apply for such consent, and provide for the issuance of a permit or equivalent as evidence of a decision to grant such consent and of the establishment of mutually agreed terms.¹³³ A permit or equivalent issued in this manner constitutes 'an internationally recognized certificate of compliance' serving as evidence that the genetic resource which it covers has been accessed in accordance with the relevant domestic legislation.¹³⁴ Significantly, the Nagoya Protocol requires that parties in whose territories genetic resources accessed from other parties are used should take measures to monitor the utilisation of such resources and to check that the requirements for prior informed consent have been complied with. Thus, parties are to take measures to provide that genetic resources *utilised* within their jurisdiction have been accessed in accordance with prior informed consent and mutually agreed terms, i.e. to check that domestic access and benefit sharing legislation or regulatory requirements of the party providing such resources have been met.¹³⁵ For the purposes of monitoring the utilisation of genetic resources, parties are required to establish 'checkpoints' to collect or receive from users of genetic resources information on prior informed consent, sources of genetic resources, the establishment of mutually agreed terms and/or utilisation of genetic resources, and parties must take appropriate, effective and proportionate measures to address situations of non-compliance.¹³⁶ Where the same genetic resources are found *in situ* within the territory of more than one party, the Protocol calls for cooperation between those parties, with the involvement of indigenous and local communities concerned.¹³⁷ The Protocol also calls for consideration of the need for and modalities of a global multilateral benefit sharing mechanism to address benefit sharing where genetic resources and traditional knowledge occur in transboundary situations or for which it is not possible to grant or obtain prior informed consent.¹³⁸

Like the Cartagena Protocol, the Nagoya Protocol establishes institutional and financial arrangements linked to the CBD. The Conference of the Parties to the Convention serves as the Meeting of the Parties to the Protocol, with decisions under the Protocol to be taken only by those that are parties to it.¹³⁹ The financial mechanism of the Convention is also the financial mechanism of the Protocol.¹⁴⁰ In addition, the Protocol contains detailed provisions on capacity development in developing country parties in Article 22.

Evolution of the Biodiversity Convention

The Conference of the Parties to the Convention has undertaken a wide-ranging programme of work since the Convention's entry into force in 1994.¹⁴¹ In this sense, the Convention has the character of a framework convention, providing a basis and institutional mechanisms for the elaboration of its provisions through decisions of the Conference of the Parties, as well as the development of supplementary legal instruments (albeit that only two protocols have been

¹³³ Art. 6(3). ¹³⁴ Art. 17(2) and (3). The content of such certificates of compliance is specified in Art. 17(4).

¹³⁵ Art. 15. ¹³⁶ Art. 17(1). ¹³⁷ Art. 11. ¹³⁸ Art. 10.

¹³⁹ Art. 26. Subsidiary bodies under the Convention may also serve the Protocol, and the Convention secretariat serves as secretariat to the Protocol, with any distinct costs of secretariat services to the Protocol to be met by the parties to it (Arts. 27 and 28).

¹⁴⁰ Art. 25.

¹⁴¹ See e.g. P. G. Le Prestre, 'The CBD at Ten: The Long Road to Effectiveness', 5 *Journal of International Wildlife Law and Policy* (2002) 269; and P. G. Le Prestre (ed.), *Governing Global Biodiversity: The Evolution and Implementation of the Convention on Biological Diversity* (Aldershot, UK: Ashgate, 2002).

elaborated and adopted so far). In addition to the adoption of the Cartagena and Nagoya Protocols, work has been undertaken on almost all aspects of the Convention in order to develop common understandings and promote implementation of the Convention's provisions, and to ascertain and agree upon additional action required to meet the Convention's objectives. While this approach reflects the diffuse nature of the CBD, it has resulted in a complex and seemingly fragmented programme of work and the establishment of multiple subsidiary processes. The two protocols aside, there has been little in the way of the development of further legal norms to strengthen or supplement the obligations contained in the Convention.¹⁴²

Although some of the efforts of the Conference of the Parties have focused on specific provisions of the Convention,¹⁴³ attention has also been devoted to developing and implementing specific and wide-ranging work programmes on major biomes. Thus, there are now work programmes under the Convention on: marine and coastal biodiversity, forest biodiversity; agricultural biodiversity; island biodiversity; inland waters biodiversity; dry and sub-humid land biodiversity; and mountain biodiversity. The Conference of the Parties has strongly endorsed the 'ecosystem approach' as the primary framework for action under the Convention.¹⁴⁴ The ecosystem approach is defined as a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. According to Decision V/6, the ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organisation, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognises that humans, with their cultural diversity, are an integral component of many ecosystems.

It is clear from a brief survey of the Convention's scope and provisions that much of the work conducted by the Conference of the Parties requires cooperation with, and consideration of the proper relationships with, other international agreements. These include not just the other global 'biodiversity-related conventions', but also WTO agreements,¹⁴⁵ agreements established under the auspices of the FAO, intellectual property agreements, the law of the sea,¹⁴⁶ and the climate change regime.¹⁴⁷

Impacts of climate change, and climate change response measures, on biological diversity have become a topic of growing importance under the Convention.¹⁴⁸ Among the key issues here are the incorporation of biodiversity considerations in relevant policies and rules developed under the climate change regime, as well as consideration of the potential adverse impacts on biodiversity of, for example, biofuels production,¹⁴⁹ and ocean fertilisation and other forms of

¹⁴² See generally S. R. Harrop and D. J. Pritchard, 'A Hard Instrument Goes Soft: the Implications of the Convention on Biological Diversity's Current Trajectory', 21 *Global Environmental Change* (2011), 474.

¹⁴³ See e.g. Decision VII/12 (Addis Ababa Principles and Guidelines for the Sustainable Use of Components of Biological Diversity); Decision VIII/28 (Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment); Decision VI/23 (Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species); Decision VII/16 (Akwé: Kon Voluntary Guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities).

¹⁴⁴ Decision V/6. ¹⁴⁵ See Chapter 18, pp. 841-900. ¹⁴⁶ See Chapter 11. ¹⁴⁷ See generally Chapter 8.

¹⁴⁸ See e.g. E. Morgera, 'Far Away, So Close: A Legal Analysis of the Increasing Interaction between the CBD and Climate Change Law', 2(1) *Climate Law* 85 (2011); A. Long, 'The Convention on Biological Diversity and REDD+', in C. Voigt (ed.), *Research Handbook on REDD+ and International Law* 186 (2016).

¹⁴⁹ See e.g. Decision X/37.

geoengineering. The Conference of the Parties to the CBD has adopted guidance on ways to conserve and sustainably use and restore biodiversity and ecosystem services while contributing to climate change mitigation and adaptation.¹⁵⁰ In relation to geoengineering, this guidance invites parties to ensure that in the absence of science-based, global, transparent and effective control and regulatory mechanisms for geoengineering, and in accordance with the precautionary approach and Article 14 of the Convention, no climate-related geoengineering activities that may affect biodiversity take place, until there is an adequate scientific basis on which to justify such activities and appropriate consideration of the associated risks for the environment and biodiversity and associated social, economic and cultural impacts. An exception is provided for small-scale scientific research studies that would be conducted in a controlled setting in accordance with Article 3 of the Convention, and only if they are justified by the need to gather specific scientific data and are subject to a thorough prior assessment of the potential impacts on the environment.¹⁵¹

A number of legal issues related to marine biodiversity beyond areas of national jurisdiction have also arisen.¹⁵² These include the specific question of the legal status of genetic resources of the seabed beyond areas of national jurisdiction,¹⁵³ and the legal regime that should apply to access to such resources and any benefits arising from their use. While the Convention affirms the sovereignty of states over genetic resources within their jurisdiction, and contains provisions addressing access to such resources and the sharing of benefits from their use,¹⁵⁴ it does not specifically address genetic resources beyond areas of national jurisdiction.¹⁵⁵ Broader questions of conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction have also been addressed. The Conference of the Parties to the CBD has considered the issue on a number of occasions, generally within discussions on protected areas and on marine and coastal biodiversity.¹⁵⁶ However, the primary forum for debate on such issues is now a preparatory committee established by the UN General Assembly which is to make recommendations on elements of draft text of a legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.¹⁵⁷

¹⁵⁰ See Decision X/33, and, most recently, Decision XIII/4. ¹⁵¹ Decision X/33, para. 8(w).

¹⁵² See Chapter 11, pp. 548–64.

¹⁵³ See e.g. S. Arico and C. Salpin, *Bioprospecting of Genetic Resources of the Deep-Sea-Bed: Scientific, Legal and Policy Aspects* (United Nations University, Institute of Advanced Studies, 2005).

¹⁵⁴ Now elaborated in the Nagoya Protocol discussed at pp. 403–4.

¹⁵⁵ Questions have also arisen concerning access to genetic resources and benefit sharing in relation to Antarctica, a matter which has been discussed at recent Antarctic Treaty Consultative Meetings. For example, see *Final Report of the Thirty-Second Antarctic Treaty Consultative Meeting*, 6–17 April 2009, paras. 291–319. See also D. Lohan and S. Johnston, *Bioprospecting in Antarctica* (2005).

¹⁵⁶ For example, the seventh meeting of the Conference of the Parties, in 2004, established an ad hoc working group on protected areas, and asked this group, inter alia, to explore options for cooperation for the establishment of marine protected areas beyond the limits of national jurisdiction, consistent with international law including UNCLOS, and based on scientific information (Decision VII/28, para. 29(a)). At its eighth meeting, it urged parties to increase collaborative activities to protect ecosystems in marine areas beyond the limits of national jurisdiction (Decision VIII/24, para. 11) and further addressed the question of marine protected areas in such areas (*ibid.*, para. 35ff.). At its tenth meeting, in 2010, the Conference of the Parties noted the slow progress in establishing marine protected areas in areas beyond national jurisdiction and the absence of a global process for designating such areas, and encouraged further work on this issue through the General Assembly process (Decision X/29, paras. 4 and 13). Further work has been conducted on ecologically or biologically significant marine areas (see Decisions XI/17, XII/21 and XIII/12).

¹⁵⁷ UN General Assembly Resolution 69/292, UN Doc. A/RES/69/292, 6 July 2015. See T. Scovazzi, 'The Negotiations for a Binding Instrument on the Conservation and Sustainable Use of Marine Biological Diversity in Areas Beyond National Jurisdiction', 70 *Marine Policy* (2016) 188.

The preparatory committee is due to report to the General Assembly in 2017. Thereafter, the General Assembly will decide on the convening and starting date of an intergovernmental conference, under the auspices of the United Nations, to consider the recommendations of the preparatory committee on the elements and to elaborate the text of an international legally binding instrument. In 2011, the ad hoc working group initially mandated by the General Assembly to examine these questions recommended that the process should address 'together and as a whole' marine genetic resources, including benefit sharing questions, and measures such as area-based management tools such as marine protected areas, environmental impact assessments, capacity-building and the transfer of marine technology.¹⁵⁸

Since its entry into force, the Convention has been faced with new and emerging policy challenges related to the conservation and sustainable use of biodiversity, including the development and application of new technologies. In recent years, the issue of the regulation of synthetic biology¹⁵⁹ has been an area of significant concern, raising questions about the applicability of the provisions of the Convention as well as its two Protocols, and about the need for a new instrument. Decisions adopted by the Conference of the Parties on this issue to date have urged parties to take a precautionary approach.¹⁶⁰ Further work on this issue is being undertaken by an ad hoc technical expert group established by the Conference of the Parties in order to develop further recommendations for action. Current activities focus on reviewing recent technological developments within the field of synthetic biology to assess if the developments could lead to impacts on biodiversity and the three objectives of the Convention, including unexpected and significant impacts, and identifying any living organisms already developed or currently under research and development through techniques of synthetic biology which do not fall under the definition of living modified organisms under the Cartagena Protocol.¹⁶¹

As noted above, in 2002, the Conference of the Parties adopted the 2010 Biodiversity Target 'to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth'.¹⁶² The adoption of the 2010 target led to a number of national and regional actions, as well as international cooperation among intergovernmental and non-governmental institutions to develop indicators to measure progress towards the target. However, in 2010, it was acknowledged that this target had not been met, that the state of biodiversity continued to decline and that pressures on biodiversity continued to increase.¹⁶³ In October 2010, the Conference of the Parties adopted a revised and an updated strategic plan for the Convention for the period 2011–20, including the Aichi Biodiversity Targets.¹⁶⁴ There are twenty such targets, organised

¹⁵⁸ Recommendations of the Ad Hoc Open-Ended Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity Beyond Areas of National Jurisdiction and Co-Chairs' Summary of Discussions', UNGA, 66th Session, Agenda item 77(a), UN Doc. A/66/119 (30 June 2011), Annex, para. 1. See further Chapter 11, pp. 564–6.

¹⁵⁹ The operational definition of synthetic biology developed by an ad hoc Technical Experts Group established by the Conference of the Parties on this issue is as follows: 'synthetic biology is a further development and new dimension of modern biotechnology that combines science, technology and engineering to facilitate and accelerate the understanding, design, redesign, manufacture and/or modification of genetic materials, living organisms and biological systems'. See Decision XIII/17. The Conference of the Parties has also initiated examination of the implications of digital sequence information on genetic resources for the three objectives of the CBD, see Decision XIII/16.

¹⁶⁰ Decision XI/11, para. 4; Decision XII/24, para. 3; Decision XIII/17, para.1 ¹⁶¹ Decision XIII/17, Annex.

¹⁶² Decision VI/26, Annex, para. 11.

¹⁶³ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), 17. ¹⁶⁴ Decision X/2.

under the following five strategic goals: (A) addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; (B) reducing the direct pressures on biodiversity and promote sustainable use; (C) improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity; (D) enhancing the benefits to all from biodiversity and ecosystem services; and (E) enhancing implementation through participatory planning, knowledge management and capacity-building. It is important to note that these are not designed as national targets to be achieved by individual parties, but are established as global targets to be achieved by the Convention. Nonetheless, the Conference of the Parties has urged parties to set their own targets within this framework, taking into account national needs and priorities, while also bearing in mind national contributions to the achievement of the global targets.¹⁶⁵ This global target-setting approach, relying on voluntary action by parties, seems – for now at least – to be the principal policy tool of the CBD, rather than establishing new legally binding commitments.¹⁶⁶ The fourth Global Biodiversity Outlook, published in 2014, focused on assessing progress towards achievement of the Aichi targets. It found that in most cases progress was not yet sufficient to achieve the targets set for 2020.¹⁶⁷ The target of conserving 17 per cent of terrestrial areas by 2020 was considered likely to be met globally, although the GBO found that protected area networks remain ecologically unrepresentative and that many critical sites for biodiversity are poorly conserved.¹⁶⁸

In order to promote action towards achievement of the Aichi Biodiversity Targets, increased emphasis has been placed on the concept of ‘ecosystem services’: the notion that biodiversity underpins ecosystem functioning and the provision of ecosystem services vital to human well-being, related to, *inter alia*, water, health and livelihoods.¹⁶⁹ Such emphasis is likely to lead to enhanced efforts to identify and attach economic values for the services ‘provided’ by biodiversity.

Recent efforts have also been directed at improving the so-called ‘science–policy interface’ for biodiversity – to improve mechanisms for the provision of scientific information as a basis for policymaking. While the Biodiversity Convention, and many other of the biodiversity-related conventions mentioned in this chapter, have their own scientific and technical advisory bodies, in 2012 a new mechanism, the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES) was created.¹⁷⁰ The function of the IPBES is to assess the state of

¹⁶⁵ *Ibid.*, para. 3(b).

¹⁶⁶ Harrop notes that this approach ‘may be [the CBD’s] only alternative, bearing in mind its legal weakness and the lack of willingness of the global community to assume further obligations.’ S. Harrop, ‘Biodiversity and Conservation’, in R. Falkner (ed.), *The Handbook of Global Climate and Environment Policy* 46 (2013).

¹⁶⁷ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 4 – Summary and Conclusions* (2014), 17.

¹⁶⁸ *Ibid.*, 7.

¹⁶⁹ See Decision X/2, Annex, para. 3, stating that: ‘Biological diversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being. It provides for food security, human health, the provision of clean air and water; it contributes to local livelihoods, and economic development, and is essential for the achievement of the Millennium Development Goals, including poverty reduction.’ On the concept of ‘ecosystem services’, see e.g. Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Biodiversity Synthesis* (2005), 19: ‘Biodiversity represents the foundation of ecosystems that, through the services they provide, affect human well-being. These include provisioning services such as food, water, timber, and fibre; regulating services such as the regulation of climate, floods, disease, wastes, and water quality; cultural services such as recreation, aesthetic enjoyment, and spiritual fulfilment; and supporting services such as soil formation, photosynthesis and nutrient cycling.’

¹⁷⁰ Report of the second session of the plenary meeting to determine modalities and institutional arrangements for an intergovernmental science–policy platform on biodiversity and ecosystem services, UNEP/IPBES.MI/2/9, 18 May 2012.

biodiversity and the ecosystem services that biodiversity provides, and to provide such information in response to requests from policymakers.¹⁷¹ Among other activities, at the invitation of the Conference of the Parties to the CBD, IPBES will undertake a global assessment of biodiversity and ecosystem services focusing on status and trends, the impact of biodiversity and ecosystem services on human well-being, and the effectiveness of responses, including the Strategic Plan and its Aichi Biodiversity Targets.¹⁷²

OTHER GLOBAL BIODIVERSITY-RELATED CONVENTIONS

Since the entry into force of the CBD, mechanisms have been established to promote cooperation and coordination between it and the other global biodiversity-related conventions. One such mechanism is the Liaison Group of Biodiversity-related Conventions,¹⁷³ which involves the secretariats of the CBD and six other conventions which are addressed in this section: the Convention on International Trade in Endangered Species (CITES); the Bonn Convention on Migratory Species (CMS); the Ramsar Convention on Wetlands of International Importance; the World Heritage Convention; the International Treaty on Plant Genetic Resources for Food and Agriculture; and the International Plant Protection Convention.

Convention on International Trade in Endangered Species

In 1973, twenty-one countries signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).¹⁷⁴ Thousands of species of plants and animals are subject to its regulations, which are designed to protect endangered species of flora and fauna from over-exploitation by regulating or prohibiting their international trade. The adoption of CITES was the culmination of a process beginning in 1960 at the Seventh General Assembly of the IUCN. In 1972, the Stockholm Conference adopted Recommendation 99.3 which led to the convening of a plenipotentiary conference in Washington in February and March 1973 and the adoption of the Convention.¹⁷⁵

Under CITES, species of wild flora and fauna whose conservation status is threatened by international trade are listed on one of the CITES Appendices. Appendix I lists species that are endangered due to international trade; Appendix II lists species which may become endangered if international trade is not regulated; and Appendix III lists species which are subject to domestic regulation by a party that requests cooperation from other CITES parties to control international trade. Together, the CITES Appendices currently list more than 35,000 species of animals and plants, providing varying levels of protection.¹⁷⁶ Once listed, imports and exports of

¹⁷¹ See generally www.ipbes.net

¹⁷² Decision XI/2, UNEP/CBD/COP/DEC/XI/2, 5 December 2012, para. 28; and Decision XIII/29, UNEP/CBD/COP/DEC/XIII/29, 12 December 2016, para. 4.

¹⁷³ Decision VII/26, Decision IX/27 and Decision X/20. See www.cbd.int/blg

¹⁷⁴ Washington, 3 March 1973, in force 1 July 1975, 993 UNTS 243; CITES has 183 parties, As at 28 February 2017. Amending Protocols were adopted in Bonn on 22 June 1979 (in force 13 April 1987) and in Gaborone on 30 April 1983, in force 29 November 2013. For a detailed guide to the Convention and its history, see W. Wijnstekers, *The Evolution of CITES* (Geneva: CITES Secretariat, 2011, 9th edn), available at www.cites.org

¹⁷⁵ Wijnstekers, *Evolution of CITES*, 31–2.

¹⁷⁶ The CITES listings are available at: <https://cites.org/eng/app/appendices.php>

the species concerned are subject to a permit system implemented by national management and scientific authorities. Thus, CITES depends for its implementation upon the establishment of relevant national laws and a working system of national regulatory authorities, and, for its enforcement, on, inter alia, working inspection and border controls to ensure imports and exports of listed species only take place subject to the required permits.

CITES Institutions

The Conference of the Parties meets every two to three years¹⁷⁷ to consider and adopt amendments to Appendices I and II, to review the progress of restoration and conservation of listed species, and to make recommendations for improving the effectiveness of the Convention.¹⁷⁸ Non-governmental organisations may participate as observers in meetings of the Conference of the Parties, although they cannot vote.¹⁷⁹

In addition to amendments to the Appendices to CITES, the Conference of the Parties has adopted numerous resolutions through which the provisions of CITES have evolved and been elaborated. The provisions of the Convention thus have to be read in light of the interpretations and guidance contained in these resolutions.¹⁸⁰ The main intersessional committees established by the Conference of the Parties are the Standing Committee, the Animals Committee and the Plants Committee.¹⁸¹ The Conference of the Parties may appoint additional committees as needed, and it or the Standing Committee may establish working groups to address specific issues. Numerous working groups have been established, addressing, for example, mahogany, bushmeat, the transport of live specimens, and export quotas. Such working groups are generally established for a limited duration, which may be reviewed and renewed by the Conference of the Parties.¹⁸² A permanent secretariat located in Geneva, Switzerland, oversees the application of the CITES system, although, as noted above, the day-to-day operation is a matter for the national authorities of the parties.¹⁸³

Preamble and Definitions

The Preamble recognises that 'wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the earth which must be protected for this and the generations to come', and indicates that the primary purpose of the Convention is international cooperation to protect wild fauna and flora against over-exploitation through international trade. A 'species' is any 'species, sub-species, or geographically separate population thereof';¹⁸⁴ a specimen is defined as:

¹⁷⁷ CITES provides, in Art. XI(2), that the Secretariat shall convene regular meetings of the Conference of the Parties at least once every two years, unless the Conference of the Parties decides otherwise. After 2004, for budgetary reasons, the Conference of the Parties decided that its meetings should be held every three years. There is also the possibility of holding extraordinary meetings at any time on the written request of at least one-third of the parties (Art. XI(2)).

¹⁷⁸ Art. XI(3)(b), (c) and (e). The conference also approves the CITES Secretariat's budget and considers any reports presented by the Secretariat or any party. Art. XI(3)(a) and (d).

¹⁷⁹ Art. XI(7). NGOs may, however, be refused admittance upon the objection of at least one-third of the parties present.

¹⁸⁰ Wijnstekers, *Evolution of CITES*, provides a comprehensive guide to these resolutions until 2010. The Conference of the Parties regularly reviews, amends and 'retires' resolutions. An updated list of resolutions that are in effect is maintained on the CITES website at <https://cites.org/eng/res/index.php>. In addition, the Conference of the Parties adopts decisions at each meeting. These are available at: <https://cites.org/eng/dec/index.php>

¹⁸¹ Res. Conf. 11.1 (Rev. CoP17). ¹⁸² *Ibid.* ¹⁸³ Art. XII. ¹⁸⁴ Art. I(a).

- (i) any animal or plant, whether alive or dead;
- (ii) in the case of an animal: for species included in Appendices I and II, any readily recognisable part or derivative thereof; and for species included in Appendix III, any readily recognisable part or derivative thereof specified in Appendix III in relation to the species; and
- (iii) in the case of a plant: for species included in Appendix I, any readily recognisable part or derivative thereof; and for species included in Appendices II and III, any readily recognisable part or derivative thereof specified in Appendices II and III in relation to the species.¹⁸⁵

Appendices I–III and International Trade

The three Appendices to CITES provide different levels of protection to listed species. Parties are free to introduce stricter domestic measures.¹⁸⁶ Appendix I includes ‘species threatened with extinction which are or may be affected by trade’.¹⁸⁷ Except in very limited circumstances, CITES prohibits trade in Appendix I species.¹⁸⁸ An export of an Appendix I species requires the prior grant and presentation of an export permit. Such a permit may only be issued when the Scientific Authority of the exporting state advises that the export is not detrimental to the survival of that species,¹⁸⁹ and the Management Authority of that state is satisfied that: the specimen has not been obtained in contravention of the laws of the exporting state;¹⁹⁰ any living specimen will be prepared and shipped to minimise risk of injury, damage to health or cruel treatment; and that an import permit has been granted for the specimen. In addition, a Scientific Authority of the state of import must advise that the import will be for purposes which are not detrimental to the survival of the species involved; a Scientific Authority of the state of import must be satisfied that the proposed recipient of a living specimen is suitably equipped to house and care for it; and a Management Authority of the state of import must be satisfied that the specimen is not to be used for primarily commercial purposes.¹⁹¹ Certificates are also required for re-export of specimens and for any specimen introduced from the sea.¹⁹²

Appendix II lists ‘all species which although not necessarily threatened with extinction may become so unless trade in specimens is subject to strict regulation in order to avoid utilisation incompatible with their survival’.¹⁹³ Trade in Appendix II specimens is permitted subject to issuance of an export permit. No import permit is required. An export permit may only be granted where a Scientific Authority has advised that the export it is not ‘detrimental to the survival of that species’, and that the specimen was not obtained in contravention of the law of

¹⁸⁵ Art. I(b).

¹⁸⁶ Art. XIV(1). Art. XIV(2)–(4) includes provisions on the relationship with other treaties or international agreements, including those relating to marine species.

¹⁸⁷ Art. II(1).

¹⁸⁸ Art. II(1). ‘Trade’ is defined as ‘export, re-export, import and introduction from the sea’ (Art. I(c)). For a detailed account of the rules governing trade in specimens of species in Appendix I, see Wijnstekers, *Evolution of CITES*, 123–34.

¹⁸⁹ The Conference of the Parties has issued guidance to Scientific Authorities in considering such non-detriment findings, Res. Conf. 16.7 (Rev. CoP17).

¹⁹⁰ Art. III(2)(a) and (b) and (3)(c). ¹⁹¹ For a definition of this term, see Res. Conf. 5.10 (Rev. CoP15).

¹⁹² Art. III(4) and (5).

¹⁹³ Art. II(2). Art. II(2)(b) provides that other species also must be subject to regulation if necessary to effectively regulate an Appendix II species.

the exporting state.¹⁹⁴ The importer must present an export permit or re-export certificate before entry is allowed.¹⁹⁵ Otherwise, the conditions for trade in Appendix II specimens are similar to those for Appendix I specimens. Scientific Authorities must monitor export permits for Appendix II species and actual exports, and advise the Management Authority of suitable measures to be taken to limit such exports in order to maintain such species throughout their range at a level consistent with their role in the ecosystem. The Conference of the Parties has adopted measures to review significant trade in specimens of Appendix II species where there are concerns that exporting states are not implementing their obligations under Article IV effectively.¹⁹⁶

Appendix III includes 'all species which any party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the cooperation of other parties in the control of trade'.¹⁹⁷ Appendix III allows parties to assist each other in enforcing their domestic wildlife legislation, and species originally listed in Appendix III often make their way into Appendix II.¹⁹⁸ For export of a specimen of a species listed on Appendix III, an export permit may be granted only if: a Management Authority of the state of export is satisfied that the specimen was not obtained in contravention of the laws of that state; and a Management Authority of the state of export is satisfied that any living specimen will be so prepared and shipped as to minimise the risk of injury, damage to health or cruel treatment.¹⁹⁹

Introduction from the Sea under CITES

The definition of 'trade' in endangered species under CITES covers not only import, export and re-export, but also 'introduction from the sea'.²⁰⁰ This is defined as 'transportation into a state of specimens of any species which were taken in the marine environment not under the jurisdiction of any state'.²⁰¹ Introduction from the sea of a species listed on Appendix I requires prior grant of a certificate from the national management authority of the state of introduction, which can only be granted when certain conditions are met. These include that the scientific authority of the state of introduction advises that the introduction will not be detrimental to the survival of the species involved; and that the management authority is satisfied that the specimen is not to be used for primarily commercial purposes.²⁰² The introduction from the sea of Appendix II species also requires a certificate from the management authority of the state of introduction, which again may only be granted if specific conditions are met.²⁰³ Since 2000, the Conference of the Parties, the Standing Committee and a working group on introduction from the sea established by the Standing Committee, have undertaken work to address the interpretation and implementation of these provisions. In 2007, the Conference of the Parties adopted a definition of 'the marine environment not under the jurisdiction of any state'.²⁰⁴ Further discussion then sought to clarify the question of which state was deemed the 'state of introduction' for the purpose of issue of the requisite certificate under the Convention.²⁰⁵

¹⁹⁴ Art. IV(2)(a) and (b). For a detailed account of the rules regulating trade in specimens of species in Appendix II, see Wijnstekers, *Evolution of CITES*, 135–51.

¹⁹⁵ Art. IV(4). ¹⁹⁶ Res. Conf. 12.8 (Rev. CoP17) ¹⁹⁷ Art. II(3). ¹⁹⁸ Art. V.

¹⁹⁹ Art. V(2). For an account of the rules regulating trade in specimens of species in Appendix III, see Wijnstekers, *Evolution of CITES*, 152–5.

²⁰⁰ Art. I(c). ²⁰¹ Art. I(e). ²⁰² Art. III(5). ²⁰³ Art. IV(6). See also Art. XIV(4) and (5).

²⁰⁴ Res. Conf. 14.6 (Rev. CoP16), para. 1. ²⁰⁵ See *ibid.*, para. 2.

Discussions on ‘introduction from the sea’ under CITES take place within a broader and much contested debate as to the proper role of CITES in the regulation of endangered, or potentially endangered, commercial fishery species.²⁰⁶ While a number of marine species are listed on the CITES Appendices,²⁰⁷ divisions over the treatment of commercial fisheries were sharply illustrated by the proposal by Monaco at the fifteenth Conference of the Parties in 2010 to list the Atlantic bluefin tuna on Appendix I of CITES.²⁰⁸

Amendments to Appendices

The most important task of the Conference of the Parties is to consider and adopt amendments to Appendices I and II.²⁰⁹ Article XV sets out the basic principles and procedures for amending Appendices to include or remove species and to move species from one Appendix to another. Amendments to the Appendices at meetings of the Conference of the Parties must be adopted by two-thirds majority of those present and voting and enter into force ninety days after that meeting for all parties that have not entered a reservation.²¹⁰ Amendments may also be adopted between meetings.²¹¹ The first meeting of the Conference of the Parties adopted more detailed criteria for listing and delisting species, known as the ‘Berne criteria’.²¹² These criteria were the source of some controversy, in part because of their perceived protectionist requirements for removing or ‘downlisting’ species (e.g. moving a species from Appendix I to Appendix II). Revised listing criteria were adopted at the ninth meeting of the Conference of the Parties.²¹³ They require that, when considering any proposal to amend Appendix I or II, the parties ‘shall apply the precautionary principle so that scientific uncertainty should not be used as a reason for failing to act in the best interest of the conservation of the species’.²¹⁴ Under the revised criteria, for listing on Appendix I or II, a species must meet certain biological and trade criteria. To qualify for Appendix I, a species must be currently threatened with extinction, and will be considered to be so if it meets specific criteria laid out in the Resolution.²¹⁵ With regard to its trade status, a species that meets the biological criteria should be listed in Appendix I if it ‘is or may be affected by trade’. This includes where the species is known to be in trade and that trade has or may have a detrimental effect on the status of the species, and where the species is suspected to be in trade or there is demonstrable potential international demand for the species, which may be detrimental to its survival in the wild.²¹⁶

²⁰⁶ See Chapter 11, pp. 513–33. Such fisheries are regulated, inter alia, under the provisions of UNCLOS, the 1995 Fish Stocks Agreement and under regional fisheries management organisations.

²⁰⁷ See e.g. the listings of whale, dolphin and porpoise species, as well as marine turtles on Appendix I. Res. Conf. 11.4 (Rev. CoP12) addresses conservation of cetaceans, trade in cetacean specimens and the relationship with the International Whaling Commission.

²⁰⁸ The Atlantic bluefin tuna fishery is regulated through the International Commission for the Conservation of Atlantic Tuna, but efforts under the Commission had failed to arrest the decline in stocks. For a discussion of the CITES proposal, see R. Martin-Nagle, ‘Unsuccessful Attempt to List Atlantic Bluefin Tuna in CITES Appendix I’, 25 *International Journal of Marine and Coastal Law* 609 (2010).

²⁰⁹ Art. XI(3). ²¹⁰ Art. XV(1). ²¹¹ Art. XV(2).

²¹² Res. Conf. 1.1 (1976) (Criteria for the Addition of Species and Other Taxa to Appendices I and II and for the Transfer of Species and Other Taxa from Appendix II to Appendix I).

²¹³ Res. Conf. 9.24 (Rev. CoP17).

²¹⁴ Res. Conf. 9.24 (Rev. CoP17); B. Dickinson, ‘The Precautionary Principle in CITES: A Critical Assessment’, 39 *Natural Resources Journal* 211 (1999).

²¹⁵ Res. Conf. 9.24 (Rev. CoP17), Annex I. ²¹⁶ *Ibid.*, Annex 5.

For Appendix II listing, the species need not currently be threatened with extinction, but it must be known, inferred or projected that either the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future, or that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.²¹⁷ There is also provision to list, on Appendix II, species, specimens of which are traded in a form that resembles specimens of other species listed in Appendix I or II, such that enforcement officers may not be able to distinguish them. Other species may be included in Appendix II where there are compelling reasons for their inclusion in order to ensure effective control of trade in currently listed species.²¹⁸ Annex 4 to Resolution 9.24²¹⁹ sets out precautionary measures for the consideration of a proposal to transfer a species from Appendix I to Appendix II or to delete a species from Appendix II.

Reservations

CITES permits parties to make reservations to the Convention in respect of any species listed in Appendix I, II or III or any parts or derivatives specified in relation to an Appendix III species either at the time at which that state becomes a party,²²⁰ or upon amendment to an Appendix.²²¹ In the case of additions to Appendices I and II, a reserving party has ninety days after the amendment to register its reservation with Switzerland, the depository government,²²² whereas reservations to Appendix III listings may be taken at any time.²²³ Reserving parties are treated as *non-parties* with regard to trade in the designated species or its parts or derivatives,²²⁴ which allows them to trade with actual non-parties and with other parties taking matching reservations unfettered by CITES requirements.²²⁵ The reservation clauses seem contradictory to the general goals of CITES, and there seems little doubt that their operation has detrimental effects on listed endangered species. Determining the effect of a reservation to an amendment uplisting a species from Appendix II to Appendix I has presented a problem in CITES enforcement. On a literal reading of the Convention, a party that was following the strict requirements applicable to trade in Appendix II specimens prior to an uplisting becomes almost completely unregulated after entering a reservation to such an amendment. In response to this flaw in CITES regulation, the fourth meeting of the Conference of the Parties recommended that parties taking reservations on transfers from Appendix II to Appendix I should continue to treat that species as if it were included in Appendix II for all purposes, including documentation and control.²²⁶

²¹⁷ *Ibid.*, Annex 2a. ²¹⁸ *Ibid.*, Annex 2b. ²¹⁹ Res. Conf. 9.24 (Rev. CoP17). ²²⁰ Art. XXIII(2).

²²¹ Art. XV(3) (Appendices I and II species); Art. XVI(2) (Appendix III species); see Res. Conf. 4.25 (Rev. CoP14) on Reservations; and Res. Conf. 11.3 (Rev. CoP17) on Compliance and Enforcement, which notes that reservations made by importing countries allow loopholes through which specimens illegally acquired in the countries of origin can find legal markets without any control.

²²² Art. XV(3). ²²³ Art. XVI(2). ²²⁴ Arts. XV(3), XVI(2) and XXIII(3).

²²⁵ Art. X imposes requirements on trade between parties and non-parties such as 'comparable documentation issued by the competent authorities' in the non-party state, which 'substantially conforms' with CITES requirements.

²²⁶ Res. Conf. 4.25 (Rev. CoP14). The resolution also calls upon all parties having entered reservations to keep and report trading statistics for species under reservations so that international trade in specimens of these species can be monitored.

Exemptions and Special Provisions

CITES incorporates several exemptions. First, the trade provisions do not apply to the transit or transshipment of species.²²⁷ Second, subject to certain exceptions, the trade provisions do not apply to specimens that are personal or household effects.²²⁸ Third, Article VII(2) provides that, when the management authority of a state of export or re-export determines that a specimen was acquired before the provisions of CITES applied to that specimen, the restrictions of Articles III, IV and V do not apply; in these circumstances, the exporting state's management authority issues a 'pre-Convention specimen' certificate so that the specimen may be traded. This section exempts 'pre-Convention specimens' from the restrictions relating to a listing on Appendix I, II or III, notably regarding permits, and it has caused certain difficulties requiring consideration by the Conference of the Parties.²²⁹

A fourth exemption applies to non-commercial trade between scientists or scientific institutions in certain specimens.²³⁰ Another may be applied in respect of certain specimens forming part of a travelling zoo, circus or other travelling exhibition.²³¹ Special provisions apply to specimens of animal species listed in Appendix I that are bred in captivity for commercial purposes and to artificially propagated plants.²³²

While not formally provided as exemptions under CITES, a number of other rules have emerged as practice through the work of the Conference of the Parties as the Convention has developed. First, rules have been developed to address the practice of 'ranching'. While Article VII(4) contains an exemption from the prohibition on trade in Appendix I species for captive bred specimens, the definition of 'bred in captivity' adopted by the Conference of the Parties excluded any commercial trade in any specimens of Appendix I species taken from the wild.²³³ The definition of 'ranching' is 'the rearing in a controlled environment of animals taken as eggs or juveniles from the wild, when they would otherwise have had a very low probability of surviving to adulthood'.²³⁴ Rules and criteria have been established by a resolution of the Conference of the Parties, under which parties may be permitted to transfer a population of an Appendix I species to Appendix II for ranching.²³⁵ In certain circumstances, this enables specimens of young animals or eggs to be taken from the wild and reared until they are commercially exploitable.

Second, although CITES does not contain express provisions on the establishment of export quotas for Appendix I species, the Conference of the Parties has in resolutions adopted a number of quota systems.²³⁶ Quotas may also be established by annotation of the Appendices.²³⁷

²²⁷ Art. VII(1); see also Res. Conf. 9.7 (Rev. CoP15).

²²⁸ Art. VII(3). This has been one of the more complicated provisions to apply: see Wijnstekers, *Evolution of CITES*, 217–26. See Res. Conf. 13.7 (Rev. CoP17).

²²⁹ See now Res. Conf. 13.6 (Rev. CoP16). ²³⁰ Art. VII(6); Res. Conf. 11.15 (Rev. CoP12).

²³¹ Art. VII(7); see Res. Conf. 12.3 (Rev. CoP17), Part VI, regarding certificates for travelling exhibitions.

²³² Art. VII(4) and (5); see Wijnstekers, *Evolution of CITES*, 493–512. See Res. Conf. 10.16 (Rev.); Res. Conf. 9.19 (Rev. CoP15); and Res. Conf. 12.10 (Rev. CoP15).

²³³ The definition was originally contained in Res. Conf. 2.12; see now Res. Conf. 10.16 (Rev.).

²³⁴ Res. Conf. 11.16 (Rev. CoP15). ²³⁵ *Ibid.*

²³⁶ Quota systems have now been adopted for a number of species and specimens, including: leopard trophies and skins (Res. Conf. 10.14 (Rev. CoP16)); markhor hunting trophies (Res. Conf. 10.15 (Rev. CoP14)); black rhinoceros hunting trophies (Res. Conf. 13.5 (Rev. CoP14)).

²³⁷ For example, quotas in respect of certain populations of African elephant have been adopted in this manner, as well as for the African spurred tortoise.

Export quotas may also be set by each party nationally provided that the scientific authority of the state has advised that the proposed export would not be detrimental to the survival of the species.²³⁸ A party setting its own national export quotas for CITES species should inform the Secretariat,²³⁹ which in turn informs the other parties through notifications, and by listing the quotas on the Secretariat's website.²⁴⁰

CITES includes provisions concerning the adoption of rules on the marking of specimens, to assist identification,²⁴¹ and further resolutions have applied special marking requirements to specimens from ranching operations or species subject to quotas.

Compliance and Enforcement²⁴²

The enforcement provisions of CITES are relatively detailed compared to many other environmental treaties, yet compliance and enforcement remain enormous challenges to the effectiveness of the Convention.²⁴³ CITES relies for its implementation upon the proper functioning of national management and scientific authorities, as well as effective border controls to ensure that any trade in specimens of endangered species takes place in accordance with the Convention's requirements. All parties must take appropriate measures to enforce the Convention and prohibit trade in specimens in violation of its provisions, including by penalising trade and possession, and providing for confiscation or return to the state of export.²⁴⁴ The Conference of the Parties has adopted various resolutions aimed at improving compliance.²⁴⁵ Resolutions have also been adopted to improve enforcement and compliance relating to specific species.²⁴⁶

The Conference of the Parties has urged the parties, intergovernmental organisations and non-governmental organisations to provide additional financial support for the enforcement of the Convention. The Secretariat was directed, inter alia, to pursue closer international liaison between the Convention's institutions, national enforcement agencies and existing intergovernmental bodies, particularly the World Customs Organization and ICPO-Interpol.²⁴⁷ CITES now plays a role in wider initiatives such as the International Consortium on Combating Wildlife Crime to support national wildlife law enforcement agencies.²⁴⁸

The illegal trade in wildlife has become the subject of increasing international concern, and in 2016, the UN Office on Drugs and Crime issued its first assessment of global wildlife crime.²⁴⁹ Concerns relating to poaching and illegal trade have prompted other initiatives and responses. In 2014, at the London Conference on the Illegal Wildlife Trade, governments

²³⁸ Res. Conf. 14.7 (Rev. CoP15). ²³⁹ Res. Conf. 12.3 (Rev. CoP17).

²⁴⁰ See the list of national export quotas maintained on the CITES Secretariat website at www.cites.org

²⁴¹ Art. VI(7); see Wijnstekers, *Evolution of CITES*, 195ff.

²⁴² On regional enforcement of CITES, see 1994 Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, pp. 440–1.

²⁴³ See R. Reeve, *Policing International Trade in Endangered Species: The CITES Treaty and Compliance* (2002).

²⁴⁴ Art. VIII(1). ²⁴⁵ Res. Conf. 8.4 (Rev. CoP15); Res. Conf. 11.3 (Rev. CoP17); Res. Conf. 14.3 (Rev. CoP17).

²⁴⁶ For example, Res. Conf. 11.9 (Rev. CoP13) (freshwater turtles and tortoises); Res. Conf. 11.8 (Rev. CoP17) (Tibetan antelope); Res. Conf. 13.4 (Rev. CoP16) (great apes); Res. Conf. 12.5 (Rev. CoP17) (tigers and other Appendix I Asian big cat species).

²⁴⁷ Res. Conf. 11.3 (Rev. CoP17) (compliance and enforcement).

²⁴⁸ Other participating organisations are: Interpol, the UN Office on Drugs and Crime, the World Bank, and the World Customs Union.

²⁴⁹ UNODC, *World Wildlife Crime Report* (2016).

expressed commitment to a range of action to combat illegal trade.²⁵⁰ In 2014, the UN Security Council identified and sought to address a link between conflict and illicit trade in wildlife in two resolutions.²⁵¹

1979 Bonn Convention on Migratory Species

Since migratory species do not respect national boundaries, they pose a particular challenge to an international legal order premised upon the territorial state. The only effective approach is for international legal regulation to apply ‘concerted action of all states within the national jurisdictional boundaries of which such species spend any part of their life cycle’.²⁵² Several of the agreements described in this chapter apply to migratory species,²⁵³ and the *raison d’être* for a host of others is the migratory nature of the species that is being conserved.²⁵⁴

The origins of the 1979 Convention on the Conservation of Migratory Species of Wild Animals (1979 CMS)²⁵⁵ can be traced to Recommendation 32 of the 1972 Stockholm Action Plan and an initiative by the then West German government to prepare a draft migratory species convention which would remedy the lack of uniformity and limited application of the agreements in force at the time.²⁵⁶ The 1979 CMS is potentially of global application and has 124 parties. Writing in 1985, Lyster noted that it was a particularly interesting agreement for three reasons: it covers an unusually broad range of threats to listed species; its provisions are ‘unusually rigorous in their restrictions’; and it establishes a precedent in international wildlife law for providing for subsidiary agreements which focus attention and efforts on particular species.²⁵⁷ The latter characteristic is suggestive of the ‘framework’ convention approach reflected in later environmental treaties.

The 1979 CMS has as its objective the conservation and effective management of migratory species, which are defined as:

the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries.²⁵⁸

Article III provides for the listing in Appendix 1 of migratory species where there is reliable evidence that the species is endangered.²⁵⁹ ‘Endangered’ means that a migratory species is ‘in danger of extinction throughout all or a significant portion of its range’.²⁶⁰ Parties that are range states of Appendix I migratory species must then endeavour: to conserve and restore habitats; to prevent or minimise adverse effects of activities which seriously impede or prevent the migration

²⁵⁰ London Conference on the Illegal Wildlife Trade, 12–13 February 2014, Declaration, www.gov.uk/government/uploads/system/uploads/attachment_data/file/281289/london-wildlife-conference-declaration-140213.pdf.

A further conference to review progress was held in Kasane, Botswana in 2015.

²⁵¹ SC Res. 2134 (2014) and SC Res. 2136 (2014), addressing the situations in Central African Republic and the Democratic Republic of the Congo respectively.

²⁵² 1979 CMS, Preamble. ²⁵³ 1971 Ramsar Convention, Preamble.

²⁵⁴ See e.g. the agreements addressing fisheries and marine mammals discussed in Chapter 11.

²⁵⁵ Bonn, 23 June 1979, in force 1 November 1983, 19 ILM 15 (1979); as at 28 February 2017, there are 124 parties. See www.cms.int

²⁵⁶ S. Lyster, *International Wildlife Law* (1985), 278–9. ²⁵⁷ *Ibid.*, 297. ²⁵⁸ Preamble and Arts. I(1)(a) and II(1).

²⁵⁹ Art. III(1) and (2). ²⁶⁰ Art. I(1)(e).

of species; and to prevent, reduce or control factors that are endangering or are likely to further endanger the species.²⁶¹ Range state parties must also prohibit the taking of Appendix I migratory species, unless the taking is for scientific purposes, or to enhance the propagation or survival of a species, or to accommodate the needs of subsistence users, or where extraordinary circumstances require, and subject to notification of the secretariat of any such taking.²⁶²

Articles IV and V provide for the listing in Appendix II of migratory species (which could also be listed in Appendix I) which

have an unfavourable conservation status and which require international agreements for their conservation and management, as well as those which have a conservation status which would significantly benefit from the international co-operation that could be achieved by an international agreement.²⁶³

An 'unfavourable conservation status' exists where:

- (1) the migratory species is not maintaining itself on a long-term basis as a viable component of its ecosystems; or
- (2) the range of the migratory species is either being reduced or likely to be reduced on a long-term basis; or
- (3) there is not, and will not be in the foreseeable future, a sufficient habitat to maintain the population of the migratory species on a long-term basis; or
- (4) the distribution and abundance of the migratory species do not approach historic coverage and levels to the extent that potentially suitable ecosystems exist and to the extent consistent with wise wildlife management.²⁶⁴

In such circumstances, range states are required to endeavour to conclude agreements to benefit these species, with a view to restoring the migratory species concerned to a favourable conservation status or to maintain such a status.²⁶⁵ The agreements should cover the whole of the range of the migratory species concerned, deal with more than one migratory species, and be open to accession to all range states even if they are not parties to the 1979 CMS.²⁶⁶ Article V(4) sets out the basic characteristics of these agreements. So far, seven such legally binding agreements have been adopted, all of which contain specific action plans.²⁶⁷

- 1990 Agreement on the Conservation of Seals in the Wadden Sea Area;²⁶⁸
- 1991 Agreement on Conservation of Populations of European Bats (EUROBATS);²⁶⁹
- 1992 Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS);²⁷⁰

²⁶¹ Art. III(4). A 'range state' is one which 'exercises jurisdiction over any part of the range of that migratory species, or a state, flag vessels of which are engaged outside national jurisdictional limits in taking that migratory species' (Art. I(1)(h)). 'Range' means 'all the areas of land or water that a migratory species inhabits, stays in temporarily, crosses or overflies at any time on its normal migration route' (Art. I(1)(f)).

²⁶² Art. III(5) and (7). ²⁶³ Art. IV(1). ²⁶⁴ Art. I(1)(c) and (d). ²⁶⁵ Arts. IV(3) and (4) and V(1).

²⁶⁶ Art. V(2) and (3).

²⁶⁷ Further information about each of these agreements is available through the CMS website, www.cms.int

²⁶⁸ Bonn, 16 October 1990, in force 1 October 1991. ²⁶⁹ London, 4 December 1991, in force 16 January 1994.

²⁷⁰ New York, 17 March 1992, in force 29 March 1994; extended Agreement in force 3 February 2008.

- 1995 Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA);²⁷¹
- 1996 Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS);²⁷²
- 2001 Agreement on the Conservation of Albatrosses and Petrels (ACAP);²⁷³ and
- 2007 Agreement on the Conservation of Gorillas and Their Habitats.²⁷⁴

In addition, nineteen memoranda of understanding concerning specific species or groups of species have been adopted, which may act as a first step towards the eventual conclusion of an agreement.²⁷⁵ There are also various other action plans and initiatives addressing specific species.²⁷⁶ At its ninth meeting, the Conference of the Parties to the CMS identified certain priorities for future agreements under Articles IV and V.²⁷⁷ It has also identified criteria for assessing proposals for new range state agreements.²⁷⁸

Under the CMS, range state parties must provide the secretariat with regular information on the migratory species listed in Appendices I and II for which they consider themselves to be range states, and on the implementation of measures.²⁷⁹ Institutional arrangements comprise the Conference of the Parties, a Scientific Council and a secretariat.²⁸⁰ The Conference of the Parties is the principal decision-making organ of the Convention and has responsibility for reviewing implementation of the Convention, including reviewing and assessing the conservation status of migratory species, and making recommendations to the parties for improving the conservation status of migratory species and improving the effectiveness of the Convention.²⁸¹ Amendments to Appendices I and II are adopted at meetings of the Conference of the Parties by a two-thirds majority of parties present and voting, and they enter into force ninety days after the Conference of the Parties at which they were adopted for all parties, except for those which make a reservation within that ninety-day period.²⁸² The Conference of the Parties meets every three years.²⁸³ It has added numerous species to Appendices I and II, and has also established a formal review process for selected Appendix I species with a view to recommending specific conservation action.

²⁷¹ The Hague, 16 June 1995, in force 1 November 1999. Discussions are ongoing concerning the possibility of incorporating the Central Asian Flyway initiative into AEWA.

²⁷² Monaco, 24 November 1996, in force 1 June 2001. ²⁷³ Canberra, 19 June 2001, in force 1 February 2004.

²⁷⁴ Paris, 26 October 2007, in force 1 June 2008.

²⁷⁵ See Res. 2.6 (1988). To date, memoranda of understanding address: the slender-billed curlew (in effect 10 September 1994); Siberian crane (in effect 1 January 1999); marine turtles of the Atlantic Coast of Africa (in effect 1 July 1999); the middle European population of the great bustard (in effect 1 June 2001); marine turtles and their habitats of the Indian Ocean and Southeast Asia (in effect 1 September 2001); West African populations of the African elephant (in effect 22 November 2005); the aquatic warbler (in effect 30 April 2003); migratory birds of prey in Africa and Eurasia (in effect 1 November 2008); bukhara deer (in effect 16 May 2002); cetaceans and their habitat in the Pacific islands region (in effect 15 September 2006); dugongs and their habitats (in effect 31 October 2007); High Andean flamingos and their habitats (in effect 4 December 2008); South American migratory grassland bird species and their habitats (in effect 26 August 2007); Southern Andean hummel (in effect 4 December 2010); Eastern Atlantic populations of the Mediterranean monk seal (in effect 18 October 2007); ruddy-headed goose (in effect 21 November 2006); the saiga antelope (in effect 24 September 2006); migratory sharks (in effect 1 March 2010); and manatee and small cetaceans of Western Africa and Macronesia (in effect 3 October 2008). Further information about each of the memoranda of understanding is available through the CMS website, www.cms.int

²⁷⁶ These are: the Central Asian Flyway; the Central Asian Mammals Initiative; and the Sahelo-Saharan Megafauna Action Plan. See www.cms.int/en/cms-instruments/special-initiatives

²⁷⁷ UNEP/CMS/Resolution 9.2 (2008). ²⁷⁸ UNEP/CMS/Resolution 11.12 (2014). ²⁷⁹ Art. VI.

²⁸⁰ Arts. VII, VIII and IX. ²⁸¹ Art. VII. ²⁸² Art. XI(1) and (4)–(6).

²⁸³ The twelfth meeting of the Conference of the Parties is scheduled for October 2017.

Ramsar Convention

The first global agreement to address the conservation of a particular habitat was the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (1971 Ramsar Convention),²⁸⁴ which aims to conserve and enhance wetlands. As defined in the Ramsar Convention, wetlands are:

areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.²⁸⁵

This definition does not reflect the enormous variety of wetland types or the fact that they are dynamic, capable of changing with the seasons and over longer periods of time, and that accordingly their boundaries are often difficult to define with any degree of precision.²⁸⁶ Estimates published in 2000 suggest that globally there remain between 5.3 and 5.7 million square kilometres of wetlands, including bogs, fens, swamps, marshes, floodplains and shallow lakes. They serve a variety of functions, including flood and erosion control, water purification and shoreline stabilisation.²⁸⁷ The major threats include pollution, human settlement, agricultural drainage and fishing. Wood-cutting, degradation of the watershed, soil erosion, siltation and the diversion of water supplies are additional threats.

The Ramsar Convention reflected international legal efforts aimed at conservation by protecting a habitat type rather than a species, resulting largely from the activities of the non-governmental International Waterfowl Research Bureau. The Ramsar Convention has 169 parties and now protects 2,261 sites in those countries, comprising a total surface area of over 215 million hectares. Without prejudice to their sovereign rights, each party must designate suitable wetlands within its territory for inclusion in the List of Wetlands of International Importance, taking account of their international significance in terms of ecology, botany, zoology, limnology or hydrology.²⁸⁸ At least one wetland must be designated upon signature or ratification or accession; thereafter, the addition of further wetlands, or the extension of listed wetlands, is a matter for each party.²⁸⁹ The deletion or restriction of listed wetlands is permitted on grounds of 'urgent national interest' but must, as when parties designate entries, take into consideration the 'international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl' and compensate for any loss of wetland resources by, for example, the establishment of additional nature reserves.²⁹⁰ In 1990, the Conference of the

²⁸⁴ Ramsar, 2 February 1971, in force 21 December 1975, 996 UNTS 245 (www.ramsar.org). The Convention has 169 parties. It has been amended twice: first by the Paris Protocol of 3 December 1982, in force 10 October 1986, 22 ILM 698 (1982), and second by the Regina Amendments of 28 May 1987, in force 1 May 1994, IELMT 977:9/13. The Paris Protocol inserted a new Art. 10bis to provide for amendment of the Convention and the Regina Amendments addressed the operation of the Convention, including the Conference of the Parties, the Standing Committee, the Secretariat and the budget.

²⁸⁵ Art. 1(1).

²⁸⁶ See World Conservation Monitoring Centre, *Global Biodiversity: Earth's Living Resources in the 21st Century* (2000), noting that, according to the broadest grouping of habitat types, there are thirty categories of natural wetlands and nine human-made categories.

²⁸⁷ *Ibid.* ²⁸⁸ Art. 2(1)–(3). ²⁸⁹ Art. 2(4) and (5). ²⁹⁰ Arts. 2(5) and (6) and 4(2).

Parties adopted criteria for the designation of wetlands sites, which have been updated on a number of occasions.²⁹¹

Parties are to formulate and implement planning so as to promote conservation of wetlands in the List and wise use of wetlands in their territory. The concept of ‘wise use’ of wetlands has been the subject of guidance by the Conference of the Parties, and is defined as ‘the maintenance of their ecological character, achieved through ecosystem approaches, within the context of sustainable development’.²⁹² Parties must make arrangements to ensure that they are informed of any actual or likely change in the ecological character of any of their listed wetlands, which information is to be passed on to the Convention secretariat.²⁹³ Parties are to promote conservation by establishing nature reserves on wetlands, whether on the List or not, and are to endeavour to increase waterfowl populations on appropriate wetlands.²⁹⁴ The Convention also encourages research, the exchange of data, the training of personnel, and consultation between parties about implementing their obligations.²⁹⁵

In 2015, the ICJ issued a judgment in the joined *Costa Rica v. Nicaragua* cases involving allegations of transboundary environmental harm related to a border area in which there are wetland areas that each state had designated as wetlands of international importance on the Ramsar Convention’s List.²⁹⁶ In its case against Nicaragua, Costa Rica contended that, in addition to its obligations under general international law,²⁹⁷ Nicaragua was under a duty to notify and consult with it as a result of treaty obligations, including Article 3(2)²⁹⁸ and Article 5²⁹⁹ of the Ramsar Convention. Nicaragua did not dispute the obligation to notify and consult under general international law, but it argued that Article 3(2) and Article 5 were not applicable to the facts of the case.³⁰⁰ The Court found that the evidence before it did not indicate that Nicaragua’s dredging programme had brought about any changes in the ecological character of the wetland, or that it was likely to do so unless it were to be expanded. Therefore, Nicaragua was not under an obligation to inform the Ramsar Secretariat.³⁰¹ In relation to Article 5, the Court found that while this provision contained a general obligation to consult ‘about implementing obligations arising from the Convention’, it did not create an obligation for

²⁹¹ Res. XI.8 (2012), Annex 2, Revised Strategic Framework and Guidelines for Future Development of the List of Wetlands of International Importance. See Ramsar Convention Secretariat, *Ramsar Handbook 17: Designating Ramsar Sites* (2010, 4th edn).

²⁹² See, most recently, Res. IX.1; and Ramsar Convention Secretariat, *Ramsar Handbook 1: Wise Use of Wetlands* (2010, 4th edn).

²⁹³ Arts. 3 and 4(1) and (4); ‘waterfowl’ are defined as ‘birds which are ecologically dependent on wetlands’ (Art. 1(2)).

²⁹⁴ Art. 4(1) and (4). ²⁹⁵ Arts. 4(3) and (5) and 5.

²⁹⁶ *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua); Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, Judgment of 16 December 2015. The wetlands in question were the ‘Humedal Caribe Noreste’ wetland designated by Costa Rica, and the ‘Refugio de Vida Silvestre Rio San Juan’ wetland designated by Nicaragua.

²⁹⁷ See Chapter 6, pp. 213–17.

²⁹⁸ Article 3(2) provides: ‘Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List [of wetlands of international importance] has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the [Ramsar Secretariat].’

²⁹⁹ Article 5 provides: ‘The Contracting Parties shall consult with each other about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. They shall at the same time endeavour to co-ordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna.’

³⁰⁰ Judgment of 16 December 2015 (see n. 296), para. 107. ³⁰¹ *Ibid.*, para. 109.

Nicaragua to consult with Costa Rica concerning a particular project that it was undertaking, in this case the dredging of the Lower San Juan River. Nicaragua was not required under the Ramsar Convention to notify, or consult with, Costa Rica prior to commencing its dredging project.³⁰²

The Court observed, in relation to Nicaragua's complaint against Costa Rica concerning the construction of a road along the San Juan River in the border area, that for the purposes of considering whether the construction of the road posed a risk of significant transboundary harm, it would have regard to the nature and magnitude of the project and the context in which it was to be carried out. In this regard, the geographic conditions of the river basin where the road was to be situated had to be considered. In the Court's view, the fact that the road would pass through, or be in close proximity to wetlands of international importance designated under the Ramsar Convention heightened the risk of significant damage because it denoted that the receiving environment was particularly sensitive. The principal harm that could arise was the possible large deposition of sediment from the road, with resulting risks to the ecology and water quality of the river, as well as morphological changes.³⁰³ The Court found, however, that, on the facts, Costa Rica had not violated Article 3(2) of the Ramsar Convention and, again, that Article 5 did not create an obligation to consult regarding a specific project.³⁰⁴

Meetings of the Conference of the Parties to the Convention are held every three years. The Conference of the Parties may consider problems of implementation, additions and changes to the List and changes in the character of listed wetlands. The Conference of the Parties may make recommendations to the parties on the conservation, management and wise use of wetlands and their flora and fauna, which must be taken into consideration by the parties.³⁰⁵ The Conference of the Parties is assisted by a secretariat, which maintains the List of Wetlands.³⁰⁶

To improve implementation, particularly by developing countries and countries with economies in transition, the Conference of the Parties established a 'Wetland Conservation Fund' in 1990 (subsequently renamed the Ramsar Small Grants Fund).³⁰⁷ Activities under the Ramsar Convention are presently organised within the framework of a Strategic Plan for the period 2016–24, which provides guidance to the parties and to the Convention's bodies.³⁰⁸ The Convention's secretariat cooperates with other relevant international and regional bodies, including the Biodiversity Convention's work programme on inland water biodiversity.

1972 World Heritage Convention

A number of international agreements have been adopted that establish rules for the conservation of cultural and natural heritage and landscape. Although these are not primarily aimed at the conservation of biodiversity, nature or natural resources, their provisions are generally broad enough to allow them to contribute towards conservation efforts of that type. The primary instrument is the 1972 World Heritage Convention, which was supplemented in 2001 by the Convention on Underwater Heritage.³⁰⁹ Regional heritage treaties have also been adopted for

³⁰² *Ibid.*, para. 110. ³⁰³ *Ibid.*, para. 155. ³⁰⁴ *Ibid.*, para. 172. ³⁰⁵ Art. 6(3).

³⁰⁶ Art. 8. The secretariat function is fulfilled by IUCN.

³⁰⁷ There are also other funding assistance programmes for small projects, or parts of larger projects. See www.ramsar.org/activity/investing-in-wetlands

³⁰⁸ Res. XII.2. Previous Strategic Plans covered the periods 1997–2002, 2003–8, and 2009–15.

³⁰⁹ 2001 Convention on Underwater Heritage, Paris, 2 November 2001, in force 2 January 2009, 41 ILM 40 (2002). The Convention's objectives are to ensure and strengthen the protection of underwater cultural heritage and to preserve underwater cultural heritage for the benefit of humanity (Art. 2). It does not apply to natural heritage (Art. 1(1)).

Europe³¹⁰ and the Americas.³¹¹ In 2000, the Council of Europe adopted the European Landscape Convention.³¹²

The 1972 Convention for the Protection of the World Cultural and Natural Heritage³¹³ (1972 World Heritage Convention), adopted under the auspices of UNESCO, establishes a 'system of collective protection of the cultural and natural heritage of outstanding universal value, organised on a permanent basis and in accordance with modern scientific methods'.³¹⁴ 'Natural heritage' is defined to include: (1) natural features 'of outstanding universal value from the aesthetic or scientific point of view'; (2) geological and physiological formations and areas 'which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation'; and (3) natural sites or areas 'of outstanding universal value from the point of view of science, conservation or natural beauty'.³¹⁵

Under Article 3 of the Convention, each party is responsible for identifying and delineating its own cultural and natural heritage sites. Parties recognise their duty to protect, conserve, present and transmit cultural and natural heritage on their territories to future generations.³¹⁶ To that end, each party must adopt a general policy to integrate such protection into comprehensive planning programmes, to set up appropriate services, to foster training, to take necessary legal and other measures, and to submit reports to the General Conference of UNESCO on measures it has taken.³¹⁷ More specifically, each party is 'not to take any

³¹⁰ 1969 European Convention on the Protection of Archaeological Heritage, London, 6 May 1969, in force 20 November 1970, 788 UNTS 227. A revised convention was adopted in Valetta on 16 January 1992, ETS No. 143. See also European Cultural Convention, Paris, 19 December 1954, in force 5 May 1955, 218 UNTS 139.

³¹¹ Convention on the Protection of the Archaeological, Historical and Artistic Heritage of the American Nations, Santiago, 16 June 1976, in force 30 June 1978, 15 ILM 1350 (1976); see also 1935 Treaty on the Protection of Artistic and Scientific Institutions and Historic Monuments, in force 26 August 1935, 167 LNTS 289.

³¹² 2000 European Landscape Convention, Florence, 20 October 2000, in force 1 March 2004, <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>. The aims of the Convention are 'to promote landscape protection, management and planning, and to organise European co-operation on landscape issues' (Art. 3), and to that end it provides for national measures (Arts. 4-6) and European cooperation (Arts. 7-11), including in relation to 'transfrontier landscapes' (Art. 9). Landscape is defined as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Art. 1(a)).

³¹³ See F. Francioni with F. Lenzerini (ed.), *The 1972 World Heritage Convention: A Commentary* (Oxford: Oxford University Press, 2008).

³¹⁴ Paris, 16 November 1972, in force 17 December 1975, 1037 UNTS 151, Preamble; as at 31 January 2017, 193 states are parties to the Convention.

³¹⁵ Art. 2. 'Cultural heritage' includes monuments, groups of buildings and sites of outstanding universal value from the point of view of, inter alia, history, art, science, aesthetics, ethnology or anthropology (Art. 1).

³¹⁶ Art. 4.

³¹⁷ Arts. 5 and 29. In *Commonwealth of Australia and Another v. State of Tasmania and Others* (Judgment of 1 July 1983, 68 ILR 266; see I. C. Atherton and T. Atherton, 'The Power and the Glory: National Sovereignty and the World Heritage Convention', 69 *Australian Law Journal* 631 (1995)), the Australian High Court was required to interpret Arts. 4 and 5 of the 1972 Convention, and by a narrow majority held that the provisions imposed an international obligation on Australia to take appropriate measures for the preservation of the world heritage area. The case arose following the nomination by the Commonwealth of Australia in November 1991, at the request of the Premier of the State of Tasmania, of three parks in south-west Tasmania for inclusion on the World Heritage List. Australia maintained the nomination despite the request for its withdrawal by the next Premier of Tasmania who took over following an election. In December 1982, the World Heritage Committee included the three parks in the World Heritage List under Art. 11(2) of the Convention. The government of Tasmania nevertheless authorised and commenced work on the construction of a hydroelectric dam which would have flooded a large part of the nominated area. In entering the parks on the List, the World Heritage Committee expressed its concern at the likely effect of the construction of the dam and recommended that 'the Australian authorities take all possible measures to protect the integrity of the property'. The Australian government then adopted the World Heritage Properties Conservation Act

deliberate measures which might damage directly or indirectly the cultural and natural heritage' of the territory of other parties.³¹⁸

The Convention is administered by the World Heritage Committee, which comprises twenty-one parties representing an 'equitable representation of the different regions and cultures of the world', a secretariat at UNESCO, and the General Assembly of states parties to the Convention.³¹⁹ Parties submit inventories of their properties to the World Heritage Committee, from which the Committee maintains a World Heritage List of sites, which now amounts to 1,052 sites in 165 states, of which 814 are cultural, 203 are natural, and 35 are mixed.³²⁰ Inclusion on the List requires the consent of the party or parties concerned.³²¹ From the World Heritage List the Committee establishes a subsidiary 'List of World Heritage in Danger', comprising sites threatened by 'serious and specific dangers' and for the conservation of which 'major operations' are necessary and for which assistance under the Convention is requested.³²² The Committee has established criteria for both lists.³²³ Properties included or potentially suitable for inclusion in the lists can receive international assistance to secure their protection, conservation, presentation or rehabilitation.³²⁴ The Committee has taken the position that oil, and gas and minerals exploration or exploitation is incompatible with World Heritage status. Where parties have issued licences for such activities, the Committee has urged the party concerned to cancel the licences.³²⁵

The Convention establishes a World Heritage Fund as a trust fund of assessed and voluntary contributions and other resources, the use of which is to be decided by the Committee.³²⁶ Any party may request international assistance for cultural or natural heritage property identified on the List or the Danger List that has outstanding universal value situated within its territory.³²⁷

International Treaty on Plant Genetic Resources for Food and Agriculture

As its title suggests, this treaty addresses a specific subset of biodiversity of critical importance to human well-being, namely the genetic resources of food crops. International negotiations and policymaking on this issue have been closely linked to, and influenced by, developments relating to access to genetic resources and benefit sharing under the CBD and, more recently, the Nagoya Protocol.

1983 and Regulations under the National Parks and Wildlife Conservation Act 1975 (Commonwealth) which would make the construction of the dam unlawful on the basis, inter alia, that it was necessary to give effect to the provisions of the 1972 Convention. Central to the case was the question of whether Arts. 4 and 5 of the World Heritage Convention imposed any legal obligation upon Australia to protect the area entered on the List and, if so, what kind of obligation. A four-judge majority of the High Court held that Arts. 4 and 5 imposed an international obligation on Australia to take appropriate measures for the preservation of the world heritage area.

³¹⁸ Art. 6(3). ³¹⁹ Arts. 8(1) and (2), 14 and 16(1). ³²⁰ Art. 11(1) and (2). ³²¹ Art. 11(3).

³²² Art. 11(4). These dangers include the threat of disappearance from accelerated deterioration, development projects, armed conflict, and natural disasters including changes in water level, floods and tidal waves (*ibid.*).

³²³ *Operational Guidelines for the Implementation of the World Heritage Convention*, WHC.16/01, 26 October 2016, paras. 177–80.

³²⁴ Art. 13(1).

³²⁵ See Decision 39.COM 7A.4, *Virunga National Park (Democratic Republic of the Congo)* (N63) 2015, and Decision 40.COM 7A.4, *Virunga National Park (Democratic Republic of the Congo)* (N63) 2016. The site in question has been placed on the List of World Heritage in Danger.

³²⁶ Arts. 13(6) and 15–18. ³²⁷ Arts. 19 and 20.

In 1983, the FAO Council adopted a non-binding International Undertaking on Plant Genetic Resources (FAO Undertaking) to preserve plant genetic resources and make them as widely available as possible for plant breeding.³²⁸ The FAO Undertaking was based on ‘the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be made available without restriction’.³²⁹ Adhering states undertook to protect and preserve the genetic resources of plants growing in their natural habitat in the major centres of genetic diversity, and to ensure the collection and safeguarding of material where resources were in danger of becoming extinct because of agricultural or other development.³³⁰ They also undertook to make plant genetic resources under their control available, free of charge, for scientific research, plant breeding, or genetic resource conservation.³³¹ The Undertaking’s objective of furthering international cooperation included the establishment of an international network of base collections in gene banks.³³² In response to concerns that the Undertaking was not compatible with the protection of plant breeders’ rights, further resolutions were adopted containing interpretations of the Undertaking. Resolution 4/89 declared that plant breeders’ rights under the International Union for the Protection of New Varieties of Plants (UPOV)³³³ were not incompatible with the FAO Undertaking, and that an adhering state may impose such minimum restrictions on the free exchange of plant genetic resources as are necessary to conform with national and international obligations.³³⁴ Resolution 5/89 further addressed the concept of ‘farmers’ rights’.³³⁵ In 1991, notwithstanding the reference to plant genetic resources as ‘a heritage of mankind’, a further resolution recognised the sovereign rights of states over plant genetic resources.³³⁶ However, the adoption of the CBD in 1992 gave rise to calls for the FAO Undertaking to be revised in light of the Biodiversity Convention’s provisions on access to genetic resources and benefit sharing.

In November 1993, the FAO Conference called on its Commission on Genetic Resources for Food and Agriculture to open negotiations for the revision of the Undertaking as a legally binding agreement that would operate in harmony with the Biodiversity Convention. After some seven years of negotiation, the International Treaty on Plant Genetic Resources for Food and Agriculture was adopted in 2001.³³⁷ Essentially, the Treaty sought to balance the need for international cooperation and exchange of genetic resources for food and agriculture, in order to meet food security imperatives, with the need to provide for the fair sharing of benefits arising out of the use of such resources. The objectives of the 2001 Treaty are ‘the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable

³²⁸ Rome, 23 November 1983, as supplemented; Res. 8/83 of the twenty-second FAO Conference. The Undertaking was part of the FAO’s Global System on Plant Genetic Resources for Food and Agriculture. A total of 113 states expressed their commitment to the Undertaking.

³²⁹ Art. 1. ³³⁰ Art. 4. ³³¹ Art. 5. ³³² Art. 7(1)(a).

³³³ 1961 UPOV Convention, as revised in 1978. Under the UPOV Convention, a plant variety is subject to protection under the Convention if it is distinct, uniform and stable, and satisfies the requirement of ‘novelty’. See International Union for the Protection of New Varieties of Plants, www.upov.int

³³⁴ 1989 Agreed Interpretation, paras. 1 and 2.

³³⁵ The concept of ‘farmers’ rights’ recognises the contribution that local and indigenous communities, and farmers in all regions of the world, especially those in centres of origin and centres of crop diversity, make to the conservation and sustainable use of the plant genetic resources that are used for food and agriculture. See now Art. 9(1) of the International Treaty on Plant Genetic Resources for Food and Agriculture.

³³⁶ Res. 3/91.

³³⁷ FAO Conference Res. 3/2001, Rome, 3 November 2001, in force 29 June 2004. By 13 March 2017, there were 141 parties. See www.planttreaty.org

sharing of the benefits arising out of their use, in harmony with the CBD, for sustainable agriculture and food security'.³³⁸ In furtherance of these objectives, the parties must promote an integrated approach to the exploration, conservation and sustainable use of plant genetic resources through activities such as: surveying and collecting plant genetic resources; promoting on-farm, *in situ* and *ex situ* conservation of such resources; and monitoring the maintenance of the viability, the degree of variation, and the genetic integrity of collections of plant genetic resources for food and agriculture.³³⁹ Parties also committed to develop and maintain policy and legal measures to promote the sustainable use of plant genetic resources, such as the promotion of diverse farming systems and broadening the genetic base of crops.³⁴⁰ Pursuant to Article 9 of the Treaty, parties must take measures to protect and promote 'farmers' rights', including traditional knowledge, the right to participate in the equitable sharing of benefits arising from the utilisation of plant genetic resources, and the right to participate in national decision-making on matters related to the conservation and sustainable use of plant genetic resources.

Part IV of the Treaty established a Multilateral System for access to plant genetic resources for food and agriculture, and the sharing of benefits deriving from their utilisation. The Treaty recognises the sovereign rights of parties over their plant genetic resources, including that the authority to determine access to those resources rests with national governments and is subject to national legislation.³⁴¹ The Multilateral System covers plant genetic resources in sixty-four food crops and forages, listed in Annex I, which are under the management and control of parties and in the public domain.³⁴² Other private entities that hold plant genetic resources are encouraged to include those resources within the Multilateral System.³⁴³ The contracting parties undertake to facilitate access by other contracting parties, including natural and legal persons under their jurisdiction, to the plant genetic resources under the Multilateral System.³⁴⁴ Access is subject to the condition that it is provided solely for the purpose of utilisation and conservation for research, breeding and training for food and agriculture; pharmaceutical and industrial uses are not permitted.³⁴⁵ Recipients of genetic resources must not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System.³⁴⁶ Any benefits (including commercial benefits) arising from the use of resources under the Multilateral System must be shared fairly and equitably through mechanisms such as the exchange of information, access to and transfer of technology, capacity-building and the sharing of any benefits arising from commercialisation.³⁴⁷ Benefits must flow primarily, directly or indirectly, to farmers.³⁴⁸

Oversight of the Treaty's implementation is by a Governing Body composed of the contracting parties. The Governing Body has oversight of the Multilateral System, may establish subsidiary bodies as necessary, and may consider amendments to the Treaty or its Annexes.³⁴⁹ The Governing Body is assisted by a Secretary appointed by the Director General of the FAO.³⁵⁰ In 2013, the Governing Body established a working group to examine enhancing the functioning of

³³⁸ Art. 1. ³³⁹ Art. 5. ³⁴⁰ Art. 6. ³⁴¹ Art. 10. ³⁴² Arts. 11.1 and 11.2. ³⁴³ Art. 11.3.

³⁴⁴ Art. 12.1. ³⁴⁵ Art. 12.3(a).

³⁴⁶ Art. 12.3(d). A number of states parties submitted declarations upon ratification concerning this provision on intellectual property rights, see FAO Legal Office, status of Treaties under Article XIV of the FAO Constitution, www.fao.org/fileadmin/user_upload/legal/docs/033s-e.pdf

³⁴⁷ Art. 13. ³⁴⁸ Art. 13.3. ³⁴⁹ Art. 19. ³⁵⁰ Art. 20.

the Multilateral System of Access and Benefit-sharing.³⁵¹ The mandate of this working group was subsequently extended to 2017.³⁵²

International Plant Protection Convention

Several international agreements have been developed to improve cooperation in controlling pests and diseases of plants and plant production, and in preventing their introduction and spread across national boundaries. These include the 1951 International Convention for the Establishment of the European and Mediterranean Plant Protection Organization,³⁵³ the 1954 Phytosanitary Convention for Africa South of the Sahara,³⁵⁴ the 1956 Plant Protection Agreement for the Asia and Pacific Region,³⁵⁵ the 1959 Agreement Concerning Co-operation in the Quarantine of Plants and Their Protection Against Pests and Diseases,³⁵⁶ the 1993 Agreement for the Establishment of the Near East Plant Protection Organization³⁵⁷ and the 1997 FAO International Plant Protection Convention.³⁵⁸ These treaties provide for a combination of measures, including the development of national standards, restrictions on import and export, and research on phytosanitary conditions. They focus primarily on averting the spread of plants pests and diseases and the risk they pose to both cultivated and wild plants. They have a particular importance in light of growing knowledge about the impacts of alien invasive species on biodiversity.

The 1997 International Plant Protection Convention requires parties to establish national plant protection organisations,³⁵⁹ and to cooperate in the establishment of regional organisations.³⁶⁰ They must put in place arrangements for phytosanitary inspections and certification.³⁶¹ Parties have the right to regulate the entry of plants and plant products, in accordance with applicable international agreements, with the aim of preventing the introduction and/or spread of pests into their territories. The Convention contains provisions designed to minimise the interference with international trade caused by phytosanitary measures.³⁶² The Commission on Phytosanitary Measures, established by the Convention, may adopt international standards in relation to plant protection.³⁶³

OTHER INSTRUMENTS ADDRESSING SPECIFIC ECOSYSTEMS OR SPECIES

Many international environmental agreements regulate specific habitats, species or species types. Such agreements fall into two basic categories: those which have as their primary purpose

³⁵¹ Res. 2/2013, Implementation of the Funding Strategy of the International Treaty.

³⁵² Res. 1/2015, Measures to Enhance the Functioning of the Multilateral System of Access to Genetic Resources and Benefit-sharing, II/GB-6/15/Res1.

³⁵³ Rome, 18 April 1951, in force 1 November 1953, UKTS 44 (1956), as amended by the European and Mediterranean Plant Protection Organization (EPPO) Council on 27 April 1955, 9 May 1962, 18 September 1968, 19 September 1973, 23 September 1982, 21 September 1988 and 15 September 1999.

³⁵⁴ London, 29 July 1954, in force 15 June 1956, 1 SMTE 115.

³⁵⁵ Rome, 27 February 1956, in force 2 July 1956, 247 UNTS 400.

³⁵⁶ Sofia, 14 December 1959, in force 19 October 1960, 1 SMTE 153. ³⁵⁷ Rabat, 18 February 1993, not yet in force.

³⁵⁸ The 1997 Convention entered into force on 2 October 2005. It amends the 1951 Convention (Rome, 6 December 1951, in force 3 April 1952, 150 UNTS 67, as revised by the FAO Conference in 1979).

³⁵⁹ Article IV. ³⁶⁰ Article IX. ³⁶¹ Article V.

³⁶² Article VII.2. See also the discussion on the WTO SPS Agreement in Chapter 18, pp. 871–82.

³⁶³ Arts. X and XI, and see www.ippc.int/en/core-activities/standards-setting/ispm

the conservation and enhancement of particular habitats or biomes (wetlands; forests; plants; soil and land); and those that address species or species types (migratory species; marine living resources;³⁶⁴ birds; and other specific species). In addition, there are agreements that specifically address cultural and other heritage, including the heritage of nature and natural resources.

Forests

Forests perform critical ecological functions: they provide habitats; they act as carbon sinks; and they contribute to maintaining and enhancing the quality of soil. Threats to forest ecosystems are diverse and include habitat conversion, the scale of legal and illegal logging, and habitat fragmentation. While forests and forest species fall within the scope of certain global and regional legally binding instruments, including the CBD, there has been no global consensus on the need for a dedicated convention on forests. Discussions on forest conservation and sustainable use at the international level have been notoriously difficult. At UNCED in 1992, states were able to agree only a non-binding statement of forest principles, and a general commitment in Agenda 21 to 'consider the need for and feasibility of all kinds of appropriately internationally agreed arrangements to promote international co-operation' on forests.³⁶⁵ Since then, further intergovernmental dialogue on forests has taken place both in dedicated forums, as well as under other agreements, including the Biodiversity Convention,³⁶⁶ and, increasingly under the climate change regime in the context of discussions on REDD+.³⁶⁷ Commodity-related issues are within the purview of the FAO Committee on Forestry and the International Tropical Timber Agreement.

International legal efforts to address forest issues have taken place against the background of the historical loss of the forests of developed countries, and of these states' efforts to ensure that the bulk of remaining forests in developing countries is preserved for their contribution to ecological cycles, particularly in relation to biodiversity and climate issues. Attempts by developed countries to 'internationalise' forest issues have been largely unsuccessful in legal terms, and the tropical forest resources of developing countries are carefully guarded as part of the national patrimony of these countries. However, that does not mean that they are entirely outside international regulation – the provisions of the CBD relating to conservation, sustainable use and access to genetic resources and benefit sharing apply, and the CBD has a work programme on forest biodiversity in place; moreover, certain species exploited for timber have been listed on the Appendices of CITES.³⁶⁸

International Tropical Timber Agreement 2006³⁶⁹

The International Tropical Timber Agreement 2006 (ITTA 2006) entered into force in 2011,³⁷⁰ replacing the ITTA 1994. The overall objectives of the ITTA 2006 are 'to promote the expansion and diversification of international trade in tropical timber from sustainably managed sources

³⁶⁴ See Chapter 11, pp. 506–48. ³⁶⁵ Agenda 21, para. 11.12(e). ³⁶⁶ Decision VI/22; see also Decision IX/5.

³⁶⁷ See Chapter 8, pp. 314–15.

³⁶⁸ Arrangements are in place for cooperation between CITES and the International Tropical Timber Organization, CITES Res. Conf. 14.4.

³⁶⁹ Geneva, 27 January 2006, in force 7 December 2011.

³⁷⁰ The members of the International Tropical Timber Organization under ITTA 2006 are thirty-five producing countries and thirty-eight consuming countries.

and legally harvested forests and to promote the sustainable management of tropical timber producing forests'.³⁷¹ These objectives are to be achieved, inter alia, by: enhancing the capacity of members to implement strategies for achieving exports of timber and timber products from sustainably managed sources; strengthening the capacity of members to improve forest law enforcement and governance, and address illegal logging and related trade in tropical timber; and encouraging information sharing for better understanding of voluntary mechanisms, such as certification,³⁷² to promote sustainable management of tropical forests.³⁷³ The ITTA 2006 also specifically refers to promoting better understanding of the contribution of non-timber forest products and environmental services to the sustainable management of tropical forests, and encouraging members to recognise the role of forest-dependent indigenous and local communities in achieving sustainable forest management.³⁷⁴

Article 21 of the ITTA 2006 established the Bali Partnership Fund to assist producing members to make the investments necessary to enhance their capacity to implement strategies for achieving exports of tropical timber and timber products from sustainably managed sources.³⁷⁵

The first International Tropical Timber Agreement was adopted in 1983 and the International Tropical Timber Organization (ITTO) established in 1986. The mandate of the ITTO was extended in the 1994 ITTA and again in the 2006 Agreement. ITTO has established strategic priorities in its 2013–18 Strategic Action Plan.³⁷⁶ The ITTO functions through the International Tropical Timber Council, composed of all members of the ITTO. Representation and voting rights in the Council are allocated between producer and consumer countries.³⁷⁷

UN Forum on Forests

In 1992, UNCED produced two documents of relevance to forests. The first was Agenda 21, which addressed forests in its Chapter 11 by setting out four programme areas. The second was the 'Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests' (1992 Forest Principles).³⁷⁸ The weakness of this instrument reflected the absence of international consensus on the subject at UNCED, and the Principles provided little by way of legal authority and content.

Following UNCED, renewed efforts were made to establish institutional arrangements for international forest management, conservation and sustainable development. At its third session, in April 1995, the UN Commission on Sustainable Development (CSD) established an Intergovernmental Panel on Forests (IPF) with a two-year mandate. The IPF's primary responsibility was the implementation of the forest-related decisions taken at UNCED. Its work was supported by an Interagency Taskforce on Forests (ITF) which coordinated the inputs of various international organisations into the forest policy process. In July 1997, the IPF was replaced by an ad hoc open-ended Intergovernmental Forum on Forests (IFF) with responsibility for promoting and facilitating the implementation of proposals for action developed by the IPF. The IFF was also given a mandate to consider international arrangements and mechanisms to promote forest management, conservation and sustainable development, with the view to developing a legally binding instrument.

³⁷¹ ITTA 2006, Art. 1. ³⁷² On certification of forest products, see e.g. the Forest Stewardship Council, www.fsc.org

³⁷³ ITTA 2006, Art. 1 ³⁷⁴ *Ibid.* ³⁷⁵ ITTA 2006, Art. 21 and Art. 1(d).

³⁷⁶ *ITTO Strategic Action Plan 2013–2018*, ITTO Policy Development Series No. 19 (2013). ³⁷⁷ ITTA 2006, Art. 10.

³⁷⁸ 13 June 1992, 31 ILM 881 (1992).

When the IFF's mandate came to an end in 2000 it was replaced by the United Nations Forum on Forests (UNFF),³⁷⁹ a subsidiary body of the UN Economic and Social Council (ECOSOC) that is still in existence. The UNFF held its first session in June 2001 and is part of the 'International Arrangement on Forests'.³⁸⁰ In its initial phase, the UNFF's overall purpose was to promote the implementation of internationally agreed action on forests at national, regional and global levels,³⁸¹ and it was to recommend the parameters of a mandate for developing a legal framework on all types of forests.³⁸² Its work is supported by the Collaborative Partnership on Forests (replacing the IFF), which consists of representatives from relevant United Nations bodies as well as other international and regional organisations in the forestry area.³⁸³ In 2006, ECOSOC set four global objectives on forests,³⁸⁴ and set out a process for the UNFF to finalise a non-legally binding instrument by 2007.³⁸⁵ It also decided to review the effectiveness of the international arrangement on forests in 2015 and to consider a full range of options at that time, including a legally binding instrument on all types of forests.³⁸⁶

2007 UN Forest Instrument

The UNFF adopted the Non-Legally Binding Instrument on All Types of Forests (now referred to as the UN Forest Instrument) at its seventh session in April 2007. The Instrument was subsequently adopted by the General Assembly in Resolution 62/98 in December 2007,³⁸⁷ and was renamed in 2016.³⁸⁸ The purpose of the Instrument is: to strengthen political commitment and action at all levels to implement effectively sustainable management of all types of forests; to enhance the contribution of forests to the achievement of internationally agreed development goals, including the Millennium Development Goals on poverty eradication and environmental sustainability; and to provide a framework for national action and international cooperation.³⁸⁹ Paragraph 4 of the Instrument provides that 'sustainable forest management, as a dynamic and evolving concept, aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations'.

The Instrument reiterates its voluntary and non-legally binding nature in a section setting out 'Principles'. This section also provides that each state is responsible for the sustainable management of its forests and its forest-related laws and that major groups, local communities and forest owners should be involved in forest decision-making processes. It further notes the need for new and additional financial resources, good governance and international cooperation.³⁹⁰

³⁷⁹ ECOSOC Res. E/2000/35, 18 October 2000.

³⁸⁰ The International Arrangement on Forests (IAF) comprises the UN Forum on Forests (UNFF) and its Member States, the UNFF Secretariat, the Collaborative Partnership on Forests (CPF), the UNFF Global Forest Financing Facilitation Network (GFFFN), and the UNFF Trust Fund. Some of the IAF's key objectives include: promoting implementation of sustainable forest management, in particular the implementation of the UN Forest Instrument; and enhancing the contribution of forests to the post-2015 development agenda. See *ECOSOC Resolution on the International Arrangement on Forests beyond 2015*, E/RES/2015/33, 22 July 2015; and *UNFF Resolution on the International Arrangement on Forests beyond 2015*, E/CN.18/2015/L.2/Rev.1, 18 May 2015.

³⁸¹ ECOSOC Res. E/2000/35, 18 October 2000, para. 1. ³⁸² *Ibid.*, para. 3(c)(i).

³⁸³ For membership of the Collaborative Partnership on Forests, see www.un.org/esa/forests/collaborative-partnership-on-forests/members/index.html

³⁸⁴ ECOSOC Resolution 2006/49, para. 3. ³⁸⁵ *Ibid.*, paras. 26–9. ³⁸⁶ *Ibid.*, para. 32.

³⁸⁷ A/RES/62/98, 31 January 2008.

³⁸⁸ A/RES/70/199, 16 February 2016, and E/RES/2015/33, *International Arrangement on Forests beyond 2015*, 5 October 2015.

³⁸⁹ 2007 Non-Legally Binding Instrument on All Types of Forests, para. 1. ³⁹⁰ *Ibid.*, para. 2.

The Instrument reaffirms four global objectives on forests and the commitment of states to work to achieve progress towards their achievement by 2015. These global objectives address: reversing the loss of forest cover worldwide; enhancing forest-based economic, social and environmental benefits; increasing significantly the area of protected forests worldwide and other areas of sustainably managed forests; and reversing the decline in official development assistance for sustainable forest management, and mobilising new and additional financial resources.³⁹¹ The Instrument also sets out national policies and measures that states 'should' take, taking into account national policies, priorities, conditions and available resources. Some twenty-five policies and measures were identified, addressing a wide range of issues.³⁹² A broad range of measures for international cooperation and means of implementation are also identified, including measures related to financial support, international cooperation in combating illegal trafficking in forest products and strengthening national capacities to address forest-related illegal practices.³⁹³ Finally, the Instrument calls on states to monitor and assess progress towards achieving the purpose of the Instrument, and provides that states should submit, on a voluntary basis, national progress reports as part of their regular reporting to the UNFF.³⁹⁴

While, like the 1992 Forest Principles, the 2007 Instrument is non-binding, it does represent a more clearly drafted reflection of the evolution of an international consensus in response to the challenge of sustainable forest management and arresting forest loss and degradation. Together with relevant ECOSOC resolutions, it also provided for some follow-up and review in 2015. Accordingly, in 2015 ECOSOC adopted a resolution on the international arrangement on forests beyond 2015, extending the arrangement to 2030.³⁹⁵ The resolution provides for the UNFF to undertake in 2024 a midterm review of the effectiveness of the international arrangement on forests in achieving its objectives, as well as a final review in 2030, and, on that basis, to submit recommendations to ECOSOC relating to the future course of the arrangement. The resolution decides, *inter alia*, that in the 2024 midterm review the Forum should consider a full range of options, including a legally binding instrument on all types of forests, the strengthening of the current arrangement and the continuation of the current arrangement.³⁹⁶ Thus, while the option of a legally binding instrument remains on the table for the future, there is no real indication that states are willing as yet to take this step.

In January 2017, a special session of the UN Forum on Forests agreed the first UN Strategic Plan for Forests.³⁹⁷ The Plan establishes six Global Forest Goals and twenty-six associated targets to be achieved by 2030, which are voluntary and universal, and include a target to increase forest area by 3 per cent worldwide by 2030. The Goals are relevant to the achievement of some of the Sustainable Development Goals, the Aichi Biodiversity Targets, as well as the objectives of the Paris Agreement on climate change.

Land and Soil Degradation, and Desertification

A 1992–3 study sponsored by UNEP found that an area of 1.2 billion hectares, nearly 11 per cent of the Earth's vegetated surface, suffered from soil degradation. This has been defined as 'a process that describes human-induced phenomena which lower the current and/or future

³⁹¹ *Ibid.*, para. 5. ³⁹² *Ibid.*, para. 6. ³⁹³ *Ibid.*, para. 7. ³⁹⁴ *Ibid.*, paras. 8 and 9.

³⁹⁵ ECOSOC Res. 2015/33, International arrangement on forests beyond 2015, E/RES/2015/33, 5 October 2015.

³⁹⁶ *Ibid.*, paras. 41–2. ³⁹⁷ See www.un.org/esa/forests/wp-content/uploads/2016/12/UNSPF_AdvUnedited.pdf

capacity of the soil to support human life', and occurs as: light degradation (good soils that show signs of degradation but can be restored using good conservation practices); moderate degradation (which allows continued agricultural use but with greatly reduced productivity, and restoration requires major changes in land-use practices); severe degradation (agricultural use is no longer possible and restoration is possible at a high cost); and extreme degradation (the area is unsuitable for agriculture and is beyond restoration).³⁹⁸ Apart from wind and water erosion, soil degradation results from chemical deterioration due to salinisation, acidification and pollution, or from physical deterioration due to compaction, waterlogging or subsidence of organic soils. These are caused principally by agricultural activities, deforestation, over-exploitation, industrial and bio-industrial activities, and overgrazing.³⁹⁹

International legal responses to address soil degradation have been limited.⁴⁰⁰ Apart from the conventions which establish general obligations,⁴⁰¹ and a 1998 Protocol on Soil Protection to the Alpine Convention, no legally binding instruments have been adopted which have, as their primary aim, specific measures to conserve, improve and rehabilitate soil, and prevent erosion and other forms of degradation.

Some non-binding instruments have established general guidelines. The FAO Council's 1982 World Soil Charter adopted agreed principles and guidelines to improve productivity, conservation and rational use of soils, and to promote 'optimum land use', recognising the responsibility of governments to ensure long-term maintenance and improvement of soil productivity.⁴⁰² UNEP subsequently adopted a World Soils Policy,⁴⁰³ developed environmental guidelines for the formulation of National Soil Policies,⁴⁰⁴ and adopted an Action Plan on Drought and Desertification.⁴⁰⁵ The Revised Montevideo Programme identified the conservation of soil as a priority legal issue, and sought to promote the effective implementation of the Plan of Action of the World Soil Charter through the preparation of guidelines for domestic legislation and related institutional arrangements.⁴⁰⁶ In 1992, the Committee of Ministers of the Council of Europe adopted a Recommendation on Soil Protection.⁴⁰⁷ The issues of soil erosion and soil micro-organisms are also addressed within the work programme on agricultural biodiversity under the CBD.⁴⁰⁸

At the Rio+20 Conference in 2012, governments recognised the need for urgent action to reverse land degradation, and agreed to strive to achieve a land-degradation neutral world in the context of sustainable development.⁴⁰⁹ In 2015, this was reflected in SDG

³⁹⁸ World Resources Institute, *World Resources (1992–3)*, 113. See also the joint study by the International Food Policy Research Institute (IFPRI) and the World Resources Institute, *Pilot Analysis of Global Ecosystems: Agroecosystems* (November 2000), 45–54.

³⁹⁹ World Resources Institute, *World Resources (1992–3)*, 111–12, citing International Soil Reference and Information Centre (ISRIC) and UNEP, *Global Assessment of Soil Degradation (GLASOD)*.

⁴⁰⁰ However, see B. Boer, H. Ginzky and I. L. Heuser, 'International Soil Protection Law: History Concepts and Latest Developments', *International Yearbook of Soil Law and Policy* 49 (2016); and B. Boer and I. Hannam, 'Developing a Global Soil Regime', 1 *International Journal of Rural Law and Policy* (2015).

⁴⁰¹ 1968 African Nature Convention, Art. IV, and 2003 African Convention, Art. VI; 1985 ASEAN Agreement, Art. 7.

⁴⁰² 25 November 1981, 21 FAO Conf. Res. 8/81, 50 *FAO Soils Bulletin*, 79.

⁴⁰³ UNEP GC/DEC/10/14, 31 May 1982; see also Plan of Action for Implementation of the World Soils Policy, UNEP/GC/DEC/12/12, 28 May 1984.

⁴⁰⁴ UNEP Environmental Guidelines for the Formulation of National Soil Policies, UNEP Environmental Management Guidelines No. 7 (1983).

⁴⁰⁵ UNEP/GC.6/11, 24 May 1978. ⁴⁰⁶ UNEP/GC.17/5, Annex, Section K (1993).

⁴⁰⁷ Recommendation 92(8), 18 May 1992, cited in 3 *Yearbook of International Environmental Law* 334 (1992).

⁴⁰⁸ CBD, Decision III/11. ⁴⁰⁹ UNGA Res. 66/288 *The Future We Want*, A/RES/66/288, 11 September 2012, para. 206.

Target 15.3.⁴¹⁰ Also in 2015, the FAO Conference endorsed the Revised World Soil Charter.⁴¹¹ The overarching goal for all parties is to ensure that soils are managed sustainably and that degraded soils are rehabilitated or restored.⁴¹² The Charter provides that soils:

are a key enabling resource, central to the creation of a host of goods and services integral to ecosystems and human well-being. The maintenance or enhancement of global soil resources is essential if humanity's overarching need for food, water, and energy security is to be met in accordance with the sovereign rights of each state over their natural resources.⁴¹³

The Charter sets out recommended actions for various stakeholders, including governments.

1994 Convention to Combat Desertification

The 1994 UN Convention to Combat Desertification was developed in the follow-up to UNCED. Desertification was defined by Agenda 21 as 'land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities',⁴¹⁴ and encompasses soil degradation⁴¹⁵ and associated changes in vegetation in arid and semi-arid areas. Chapter 12 ('Managing Fragile Ecosystems: Combating Desertification and Drought') of Agenda 21 established six programme areas to combat desertification (including soil degradation) and drought.⁴¹⁶

In December 1992, at the request of UNCED, the UN General Assembly established an intergovernmental negotiating committee to elaborate an international convention to combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa.⁴¹⁷ The United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) was adopted in June 1994 and entered into force on 26 December 1996.⁴¹⁸ Alongside the Biodiversity and Climate Change Conventions, it is considered as one of the three 'Rio Conventions' emerging from the UNCED process. The objective of the Convention is:

to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international co-operation and partnership arrangements, in the framework of an integrated approach which is consistent with Agenda 21, with a view to contributing to the achievement of sustainable development in affected areas.⁴¹⁹

⁴¹⁰ 'By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world'.

⁴¹¹ FAO Document C 2015/31, April 2015. ⁴¹² Revised World Soil Charter, para. 3.

⁴¹³ Revised World Soil Charter, Preamble.

⁴¹⁴ Agenda 21, para. 12.2; desertification is said to affect about one-sixth of the world's population, 70 per cent of all drylands, amounting to 3.6 billion hectares, and one-quarter of the total land area of the world (*ibid.*).

⁴¹⁵ See the definition of 'land degradation' in Art. 1(f)(ii) of the Desertification Convention.

⁴¹⁶ Paras. 12.15 to 12.25; 12.35 to 12.44; and 12.45 to 12.54. ⁴¹⁷ UNGA Res. 47/188 (1992).

⁴¹⁸ Paris, 17 June 1994, 33 ILM 1328 (1994). As at 21 March 2017, there are 197 parties. See www.unccd.int. See also P. Johnson, K. Mayrand and M. Paquin (eds.), *Governing Global Desertification: Linking Environmental Degradation, Poverty and Participation* (Aldershot, UK: Ashgate, 2006).

⁴¹⁹ Art. 2. 'Desertification' is defined as land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities (Art. 1(a)). 'Drought' is defined as the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems (Art. 1(c)).

Affected country parties (i.e. countries whose lands include, in whole or in part, arid, semi-arid and/or dry sub-humid areas affected or threatened by desertification) are required to develop national action programmes to combat desertification in accordance with regional criteria set out in four Annexes to the Convention.⁴²⁰ The purpose of the programmes is to identify factors contributing to desertification and practical measures necessary to combat desertification and to mitigate the effects of drought such as the establishment of early warning systems, the strengthening of drought contingency plans, the establishment of food security systems and the development of sustainable irrigation programmes. National action programmes must specify the respective roles of government, local communities and land users and the resources available and needed.⁴²¹ Development of the national programmes should take a 'bottom-up' approach ensuring the participation of populations and local communities and the creation of an 'enabling environment' at higher levels to facilitate action at national and local levels.⁴²² The programmes must also be integrated with other national policies for sustainable development.⁴²³

Obligations were also placed on developed country parties to provide 'substantial' financial resources and other forms of support to affected developing countries, particularly those in Africa, and to promote and facilitate access by affected country parties, particularly affected developing country parties, to appropriate technology, knowledge and know-how.⁴²⁴ In implementing the Convention, the parties must give priority to affected African country parties, in the light of the particular situation prevailing in that region, while not neglecting affected developing country parties in other regions.⁴²⁵

The primary institution of the Convention is the Conference of the Parties, which meets every two years, and is responsible for reviewing the implementation of the Convention, facilitating the exchange of information on implementing measures and adopting amendments to the Convention.⁴²⁶ It is supported by a Permanent Secretariat,⁴²⁷ a Committee on Science and Technology,⁴²⁸ and a Committee for the Review of the Implementation of the Convention.⁴²⁹

Birds

The international legal protection of birds is the express objective of two specific agreements: the 1950 Birds Convention and the 1970 Benelux Convention.⁴³⁰ Certain species of birds are also subject to protection under the 1971 Ramsar Convention, the 1973 CITES, and agreements and other instruments under the 1979 CMS, as well as many treaties of general application to flora and fauna adopted at the regional level. Several important bilateral treaties have also been adopted.⁴³¹

⁴²⁰ Art. 5. Regional Implementation Annexes are provided for Africa, Asia, Latin America and the Caribbean, and the Northern Mediterranean.

⁴²¹ Arts. 10.1 and 10.2. ⁴²² Art. 3(a). ⁴²³ Art. 5(b). ⁴²⁴ Art. 6. ⁴²⁵ Art. 7. ⁴²⁶ Art. 22.

⁴²⁷ Art. 23. Since January 1999, the permanent Secretariat of the UNCCD has been located in Bonn, Germany.

⁴²⁸ Art. 24.

⁴²⁹ This Committee was initially established by Decision 1/COP.5; in Decision 11/COP.9, the Conference of the Parties decided to establish the Committee as a standing subsidiary body of the Convention.

⁴³⁰ Within the European Union, the primary relevant instrument is Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds, OJ L20/7, 26.01.2010.

⁴³¹ See e.g. Convention for the Protection of Migratory Birds in the United States and Canada, Washington, 16 August 1916, 4 IPE 1638; Convention for the Protection of Migratory Birds and Game Mammals (Mexico–United States), 7 February 1936, 178 LNTS 309; and Convention for the Protection of Birds and Birds in Danger of Extinction, and Their Environment (Japan–United States), Tokyo, 4 March 1972, 25 UST 3329. Other bilateral agreements have

1950 Birds Convention

The only global instrument specifically designed to protect birds is the 1950 International Convention for the Protection of Birds (1950 Birds Convention),⁴³² which superseded a 1902 Convention.⁴³³ The absence of any institutional or financial arrangements to ensure that the Convention is implemented has limited its effectiveness. The 1950 Birds Convention, which has attracted very limited participation, is intended to protect birds in the wild by granting protection to all birds during their breeding season, to migratory birds during their return flight to nesting grounds, and to species in danger of extinction or of scientific interest throughout the year.⁴³⁴ Subject to certain exceptions, the Convention prohibits the import, export, sale, offer for sale, giving or possession of any live or dead bird, or part, or eggs or their shells or broods killed or captured in breach of the Convention.⁴³⁵ The Convention also outlaws certain methods likely to result in the mass killing or capture of birds or cause them unnecessary suffering.⁴³⁶ Articles 6 and 7 set forth a number of exceptions, subject to certain administrative obligations including the grant of individual permits. Each party must prepare a list of birds that may be captured or killed in its territory and a list of species of indigenous or migratory birds which may be kept in captivity, for the purpose of regulating trade in birds, to prevent their destruction, and to promote the creation of undisturbed water or land reserves.⁴³⁷ In one of the earliest international provisions of this kind, parties are called upon to educate the public on the need to preserve and protect birds.⁴³⁸

1970 Benelux Convention

The 1970 Benelux Convention on the Hunting and Protection of Birds (1970 Benelux Convention)⁴³⁹ further provides for the harmonisation of dates for the opening and closing of hunting seasons, procedures and methods permitted for hunting, and the adoption of additional measures for the protection of particular species of birds.⁴⁴⁰

Other Animal Species⁴⁴¹

1973 Polar Bear Agreement

The 1973 Agreement on Conservation of Polar Bears (1973 Polar Bear Agreement)⁴⁴² prohibits the taking of polar bears in the Arctic except for *bona fide* scientific or conservation purposes, or to prevent serious disturbance of the management of other living resources.⁴⁴³ Taking is also permitted by local people using traditional methods in the exercise of their traditional rights and

included US–Japan (1972); Japan–Soviet Union (1973); Australia–Japan (1974); Japan–China (1981); and Australia–China (1986).

⁴³² Paris, 18 October 1950, in force 17 January 1963, 638 UNTS 185. Ten states became parties to the Convention.

⁴³³ Paris, 19 March 1902, IELMT 902:22.

⁴³⁴ Arts. 1 and 2. In *Count Lippens v. Etat Belge, Ministre d'Agriculture*, 13 March 1964, 47 ILR 336, the Belgian Conseil d'Etat held that Art. 2 did not lay down a positive rule of law, but constituted 'an undertaking on the part of the contracting parties that each one of them will take such steps by way of legislation or regulation as may be necessary to implement it', and it created neither rights nor duties for the individual (*ibid.*, 339).

⁴³⁵ Arts. 3 and 4. ⁴³⁶ Art. 5. ⁴³⁷ Arts. 8–11. ⁴³⁸ Art. 10.

⁴³⁹ Brussels, 10 June 1970, in force 1 July 1972, 847 UNTS 255. ⁴⁴⁰ Arts. 1, 2, 4, 7 and 8.

⁴⁴¹ See also the agreements and memoranda of understanding adopted under the Bonn Convention on Migratory Species, pp. 417–20.

⁴⁴² Oslo, 15 November 1973, in force 26 May 1976, 13 ILM 13 (1973); parties are Canada, Norway, United States, Russia and Greenland (Denmark).

⁴⁴³ Arts. I and III(1)(a)–(c); 'taking' includes hunting, killing and capturing (Art. I(2)).

wherever polar bears have or might have been subject to taking by traditional means by nationals.⁴⁴⁴ Parties must protect the ecosystems of polar bears, including habitat components such as denning and feeding sites and migration patterns, and must manage populations in accordance with sound conservation practices on the basis of the best available scientific data.⁴⁴⁵ Trade in polar bears or their parts is prohibited under the Convention, which also encourages research, actions for compliance by nationals of non-parties, and consultation.⁴⁴⁶ The Convention establishes no institutions, and consultation meetings for the parties have been rare. Issues related to polar bear conservation are now being addressed in broader discussions concerning the Arctic, and the impacts of climate change.⁴⁴⁷ In September 2015, the range state parties to the Agreement approved the Circumpolar Action Plan to address impacts of climate change and other threats to polar bear populations. A bilateral agreement also exists between the US and Russia addressing conservation and management of a shared polar bear population and its habitat.⁴⁴⁸

1979 Vicuna Convention

The 1979 Convention for the Conservation and Management of the Vicuna,⁴⁴⁹ which is premised in part upon the potential economic benefits of the vicuna, prohibits hunting and illegal trade in the species and its products and derivatives in the territories of all parties, and provides for cooperation on research, technical assistance and training.⁴⁵⁰ Internal and external trade was prohibited until 31 December 1989, but any party may allow trade under strict state control if the population level of the vicuna 'would allow the production of meat, viscera and bones, as well as the processing of skins and wool into cloth', and in accordance with internationally recognised marks and in coordination with CITES.⁴⁵¹ Fertile vicunas and their semen or other reproductive material may only be exported to other parties for the purpose of research or repopulation.⁴⁵² Management of trade in vicuna products under this Convention and CITES has seen a recovery in population levels.⁴⁵³

GENERAL INSTRUMENTS OF REGIONAL AND SUBREGIONAL APPLICATION

Regional approaches allow the environmental priorities and concerns of different regions to be addressed. They also seek to ensure that the powers attached to the responsibility for managing international environmental affairs are devolved to the most appropriate level of governance, whether at the regional, subregional or bilateral level.

⁴⁴⁴ Art. III(1)(d) and (c). ⁴⁴⁵ Art. II. ⁴⁴⁶ Arts. V, VII and VIII.

⁴⁴⁷ See e.g. Conservation of Arctic Fauna and Flora (CAFF), *Arctic Biodiversity Assessment: Report for Policy Makers* (2013).

⁴⁴⁸ Agreement between the Government of the United States of America and the Government of the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear, 16 October 2000, available at: www.fws.gov/alaska/fisheries/mmm/polarbear/pdf/01_US-Russia%20Bilateral%20Agreement.pdf

⁴⁴⁹ Lima, 20 December 1979, in force 19 March 1982, IELMT 979:94; 2 SMTE 74 (unofficial translation), replacing the 1969 Convention for the Conservation of the Vicuna, La Paz, 16 August 1969. See also Agreement for the Protection and Conservation of the Vicuna, Buenos Aires, 2 February 1981.

⁴⁵⁰ Arts. 2, 7 and 8. 'Illegal trade' is defined as 'any form of transaction relating to vicuna and/or its products (sale, barter, import, export, transport, etc.) without control or authorisation from the competent State authority' (Art. 9).

⁴⁵¹ Art. 3. ⁴⁵² Art. 4.

⁴⁵³ A. Gillespie, *Conservation, Biodiversity and International Law* (Cheltenham, UK: Edward Elgar, 2011), 215–16.

The earliest regional agreement was the 1900 London Convention, a colonial treaty focused on conservation in Africa. Regional arrangements have been adopted for parts of Africa, the Americas and the Caribbean, the Pacific islands region, Europe and South East Asia. In some instances, these are stand-alone agreements; in other cases, they have been adopted within the framework of regional economic cooperation arrangements.⁴⁵⁴ Some agreements focusing on marine and coastal ecosystems have been adopted within the context of Regional Seas Agreements.⁴⁵⁵ Numerous other agreements of regional application have now also been adopted under the auspices of the CMS.⁴⁵⁶ The agreements governing the Antarctic region, and the emerging principles applicable to the Arctic, are considered in Chapter 13.

Overall, the coverage of regional agreements on the conservation and sustainable use of biodiversity is uneven. Several of the agreements surveyed below have not entered into force, another has been suspended, and some appear dormant. Given the costs associated with developing, implementing and administering treaties, and the scope of the global agreements now in place, one might question whether further regional or subregional agreements addressing biodiversity in general are necessary. At the same time, it may well be that further initiatives to address specific transboundary ecological areas or species may be desirable, or that further range state agreements or other arrangements under the CMS are needed.

Africa

Flora and fauna on the African continent were the subject of the earliest nature conservation agreements, adopted by colonial powers in the first part of the twentieth century.⁴⁵⁷ The first treaty was the 1900 London Convention for the Protection of Wild Animals, Birds and Fish in Africa,⁴⁵⁸ which was adopted by the colonial powers of the region (Great Britain, Italy, Portugal, Spain and France) to 'prevent the uncontrolled massacre and to ensure the conservation of diverse wild animal species in their African possessions which are useful to man or inoffensive'.⁴⁵⁹ The 1900 London Convention was replaced by the 1933 London Convention Relative to the Preservation of Flora and Fauna in Their Natural State.⁴⁶⁰ Both agreements included provisions and techniques for international conservation that are still found in modern treaties, including a system of annexes to list protected species, and the use of trade regulations as an instrument of environmental protection. The 1933 Convention required parties to take all necessary measures within their power to ensure 'a sufficient degree of forest country and the preservation of the best native indigenous forest species',⁴⁶¹ and recognised a link between

⁴⁵⁴ See, for example, the 1999 Wildlife Conservation and Law Enforcement Protocol to the Treaty Establishing the Southern African Development Community, Maputo, 18 August 1999, in force 30 November 2003, www.sadc.int/fanr/naturalresources/wildlife/index.php; East African Community Protocol on Environment and Natural Resources Management, not yet in force, www.eac.int/environment

⁴⁵⁵ For regional seas agreements addressing biodiversity, see Chapter 11, pp. 465–72. ⁴⁵⁶ See pp. 418–19.

⁴⁵⁷ See also, for example, Agreement on Joint Regulations on Fauna and Flora (Enugu, 3 December 1977) (Lake Chad); Convention for the Sustainable Management of Lake Tanganyika, Dar Es Salaam, 12 June 2003 (Burundi, Democratic Republic of Congo, Tanzania, Zambia).

⁴⁵⁸ London, 19 May 1900, 4 IPE 1607.

⁴⁵⁹ Preamble; cited in M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (Cambridge: Cambridge University Press, 2010, 2nd edn), 262.

⁴⁶⁰ London, 8 November 1933, in force 14 January 1936, 172 LNTS 241. ⁴⁶¹ Art. 7(5).

conservation and economic development, although the emphasis was on encouraging 'the domestication of wild animals susceptible of economic utilisation'.⁴⁶²

1968 African Nature Convention

The 1933 London Convention was superseded in 1968 with the adoption of the African Convention on the Conservation of Nature and Natural Resources (1968 African Nature Convention), which was negotiated under the auspices of the Organization of African Unity (OAU) by the governments of newly independent African states.⁴⁶³ The Convention includes broad objectives: except for atmospheric protection, the Convention applies to all environmental media, committing parties to a comprehensive approach including research, conservation education, development plans and national conservation services.⁴⁶⁴ It requires parties to take measures which are reconcilable with customary rights 'to ensure conservation, utilisation and development of soil, water, flora and faunal resources in accordance with scientific principles and with due regard to the best interests of the people'.⁴⁶⁵ The 1968 Convention contains provisions for the protection of soil from erosion through the development of land-use plans, and agricultural practices and agrarian reforms that ensure long-term productivity.⁴⁶⁶ It promotes water conservation policies and protection of flora by scientifically based conservation measures which take into account social and economic needs.⁴⁶⁷ The Convention subjects fauna to 'conservation, wise use and development . . . within the framework of land-use planning and of economic and social development', and to that end wildlife populations must be managed in designated areas with the aim of achieving an 'optimum sustainable yield'.⁴⁶⁸ Hunting, capture and fishing are subject to the grant of properly regulated permits, and certain methods are prohibited.⁴⁶⁹

The 1968 Convention makes use of an annex system. Class A species are totally protected throughout the territory of the party, while Class B species may be hunted, killed, captured or collected under special authorisation granted by the competent national authority.⁴⁷⁰ Parties may add additional species to Class A or B according to their own specific requirements.⁴⁷¹ The 1968 Convention regulates trade in listed and unlisted species, in particular by making export of the former subject to authorisation, and import and transit subject to presentation of the export authorisation.⁴⁷²

However, the Convention lacks any institutional arrangements for its implementation, which has contributed to its limited effectiveness. In 1985, the OAU convened a meeting to discuss possible revision of the Convention, and, although draft amendments were prepared with the assistance of IUCN, they were not formally adopted. However, in the late 1990s, the OAU requested assistance from IUCN, UNEP and the UN Economic Commission for Africa to revise the Convention in light of developments in international environmental law and scientific knowledge.⁴⁷³ Following further initiatives in the late 1990s, the review of the Convention was undertaken, and the revised Convention was adopted in Maputo, Mozambique, on 11 July 2003 (2003 Revised African Nature Convention).

⁴⁶² Art. 7(8). ⁴⁶³ Algiers, 15 September 1968, in force 16 June 1969, 1001 UNTS 3. ⁴⁶⁴ Arts. XII–XV.

⁴⁶⁵ Arts. II and XI. Art. XVII allows certain exceptions to the Convention, including the 'paramount interest of the state', *force majeure* and defence of human life.

⁴⁶⁶ Art. IV. ⁴⁶⁷ Arts. V and VI. ⁴⁶⁸ Art. VII(1). ⁴⁶⁹ Art. VII(2). ⁴⁷⁰ Art. VIII(1) and Annex.

⁴⁷¹ Art. VIII(2). ⁴⁷² Art. IX.

⁴⁷³ IUCN, *An Introduction to the Revised African Convention on the Conservation of Nature and Natural Resources* (IUCN Environmental Policy and Law Paper No. 56 Rev., 2006, 2nd edn), 5.

2003 Revised African Nature Convention

The objectives of the 2003 Revised African Nature Convention⁴⁷⁴ are: to enhance environmental protection; to foster the conservation of nature and natural resources; and to harmonise and coordinate policies in these fields.⁴⁷⁵ Action to achieve these objectives is to be guided by principles including the right of all peoples to a satisfactory environment favourable to their development; the duty of states to ensure enjoyment of the right to development and the duty of states to ensure that developmental and environmental needs are met in a sustainable, fair and equitable manner.⁴⁷⁶ As in the original 1968 Convention, the 2003 Convention addresses land and soil degradation,⁴⁷⁷ management of water resources,⁴⁷⁸ and vegetation cover.⁴⁷⁹ It requires parties to maintain and enhance species and genetic diversity, and, to that end, to establish and implement policies for conservation and sustainable use of such resources, particularly where they are threatened and of social, economic or ecological value, or where they are only represented in areas under the jurisdiction of one party.⁴⁸⁰ Parties are further required to ensure conservation of species and habitats within land-use planning and sustainable development policy. A series of more specific obligations concerning species and habitat management is defined, which reflect to some extent provisions of the CBD, including measures related to access to genetic resources and benefit sharing.⁴⁸¹ The 2003 Convention provides for special protection for threatened species⁴⁸² and habitats necessary for their survival.⁴⁸³ It notes that, where a species is represented only in areas under the jurisdiction of one party, that party has a particular responsibility for its protection, but also notes the need to develop and maintain concerted protection measures for threatened species throughout Africa.⁴⁸⁴ While the 2003 Convention contains no list of threatened species and habitats, it provides that annexes addressing protected species and habitats could be adopted by the Conference of the Parties.⁴⁸⁵ It also provides that parties shall regulate trade in, and the transport and possession of specimens⁴⁸⁶ or products of plants, animals or micro-organisms to ensure that such specimens or products have been taken or obtained in conformity with domestic and international obligations concerning trade in species.⁴⁸⁷

The 2003 Convention requires parties to establish, maintain and extend conservation areas.⁴⁸⁸ In this regard, parties should particularly consider conservation areas in order to: conserve ecosystems representative of and peculiar to areas under their jurisdiction, or those characterised by a high degree of biological diversity; ensure the conservation of all species, especially those which are only represented in areas under their jurisdiction or which are threatened or of special scientific or aesthetic value; and ensure conservation of habitats critical for the survival of such

⁴⁷⁴ Not yet in force. The text of the 2003 Revised African Nature Convention is available at <https://au.int/web/en/treaties/african-convention-conservation-nature-and-natural-resources-revised-version>. See IUCN, *Introduction to the Revised African Convention on the Conservation of Nature and Natural Resources*; Bowman, Davies and Redgwell, *Lyster's International Wildlife Law*, ch. 9 ('The African Convention on the Conservation of Nature and Natural Resources').

⁴⁷⁵ Art. II. ⁴⁷⁶ Art. III. ⁴⁷⁷ Art. VI. ⁴⁷⁸ Art. VII. ⁴⁷⁹ Art. VIII. ⁴⁸⁰ Art. IX(1). ⁴⁸¹ See Art. IX(2).

⁴⁸² 'Threatened species' are defined in Art. V, by reference to further definitions and criteria in Annex I to the 2003 Convention concerning 'critically endangered', 'endangered' and 'vulnerable' species. These broadly reflect the definitions of these categories utilised in the IUCN Red List: IUCN, *IUCN Red List Categories and Criteria, Version 3.1* (2001).

⁴⁸³ Art. X(1). ⁴⁸⁴ Art. XI(1) and (2). ⁴⁸⁵ Art. IX(2).

⁴⁸⁶ 'Specimens' are defined in Art. V as 'any animal or plant or micro organisms, alive or dead'. 'Products' are defined as 'any part or derivative of a specimen'.

⁴⁸⁷ Art. XI(1). ⁴⁸⁸ Art. XII.

species. 'Conservation areas', as defined in Article V, include a range of different types of protected area, with definitions and management objectives elaborated in Annex II.

The 2003 Convention requires parties to ensure that conservation and management of natural resources are integrated into national and local development plans, and that full consideration is given to ecological, as well as economic, social and cultural, factors to promote sustainable development.⁴⁸⁹ Reflecting the Biodiversity Convention, the 2003 Convention also addresses the issue of traditional rights of local and indigenous communities, providing that parties shall take measures to ensure that traditional rights and intellectual property rights of local communities are respected, and that access to indigenous knowledge and its use is subject to prior informed consent. Parties are also to enable active participation by local communities in the planning and management of natural resources with a view to creating local incentives for conservation and sustainable use of resources.⁴⁹⁰ The 2003 Convention contains further provisions addressing procedural rights in relation to the environment including dissemination and access of the public to environmental information, and access to justice.

The 2003 Convention provides for the adoption of a compliance procedure,⁴⁹¹ as well as rules on liability and compensation of damage related to matters covered by the Convention.⁴⁹² It establishes a Conference of the Parties as the decision-making body for the Convention, as well as a secretariat.⁴⁹³ There is also a provision addressing financial resources, requiring parties to make every effort to ensure that adequate financial resources are available for implementation of the Convention, and to seek, individually or jointly to mobilise further financial resources including through improvement of national, bilateral and multilateral funding mechanisms. It is envisaged that the Conference of the Parties may establish a conservation fund constituted from voluntary contributions by parties or from other sources.⁴⁹⁴ Disputes under the 2003 Convention are to be settled by agreement. If the parties to a dispute fail to settle it in this manner, then either party may, within twelve months, refer the dispute to the Court of Justice of the African Union for a final decision.⁴⁹⁵

The 2003 Convention will enter into force thirty days after the fifteenth ratification is deposited. Since its adoption in July 2003, fifty-four states have signed the Convention and thirteen have ratified it. One factor in the failure to secure sufficient ratifications for entry into force to date may be that, while the 2003 Convention reflects provisions and approaches of 'modern' multilateral environmental agreements such as the Biodiversity Convention, it must also compete with those other agreements for human and financial resources at the national level.

1994 Lusaka Agreement

At a ministerial meeting in September 1994, the governments of seven African states adopted the Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora.⁴⁹⁶ The objective of the Agreement is to reduce and ultimately eliminate illegal trade in wild fauna and flora within the territories of the states parties.⁴⁹⁷ Article 5 of the

⁴⁸⁹ Art. XIV. ⁴⁹⁰ Art. XVII. ⁴⁹¹ Art. XXIII. ⁴⁹² Art. XXIV. ⁴⁹³ Arts. XXVI and XXVII.

⁴⁹⁴ Art. XXVIII. ⁴⁹⁵ Art. XXX.

⁴⁹⁶ Lusaka, 8 September 1994, in force 10 December 1996, UNEP Doc. No. 94/7929; seven states are party: Republic of Congo, Kenya, Uganda, Zambia, Lesotho, Liberia, and Tanzania. All African states are eligible to become parties (Art. 12(3)). South Africa, Swaziland and Ethiopia are also signatories.

⁴⁹⁷ Art. 2.

Agreement provides for the establishment of a Task Force for Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, which is composed of a Director and law enforcement officers. The Director and the field officers are drawn from national law enforcement authorities and liaise with 'National Bureaus' in each of the member states to coordinate enforcement operations directed at illegal wildlife trade.⁴⁹⁸ The functions of the Task Force include: facilitating cooperative activities among the National Bureaus in carrying out investigations pertaining to illegal trade; investigating violations of national laws pertaining to illegal trade at the request of the National Bureaus or with the consent of the parties concerned; collecting, processing and disseminating information on activities that pertain to illegal trade, including establishing and maintaining databases; and providing, upon request of the parties concerned, information related to the return to the country of original export, or country of re-export, of confiscated wild fauna and flora.⁴⁹⁹ The Task Force was officially launched and commenced operational activities on 1 June 1999.⁵⁰⁰ The operations of the Task Force are overseen by a Governing Council composed of representatives from each of the parties.⁵⁰¹

The Americas and the Caribbean

A number of regional and subregional agreements of relevance to the conservation and sustainable use of biodiversity have been adopted in the Americas and the Caribbean, including the 1940 Western Hemisphere Convention, the 1978 Amazonian Treaty and the 1990 Kingston Protocol.⁵⁰² Several bilateral agreements have also been adopted which include general provisions on flora and fauna.

1940 Western Hemisphere Convention

The 1940 Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (1940 Western Hemisphere Convention), negotiated under the auspices of the Pan American Union (now the Organization of American States (OAS)), was in many respects a visionary agreement.⁵⁰³ The primary objectives of the Convention are to:

protect and preserve in their natural habitat representatives of all species and genera of their native flora and fauna, including migratory birds, in sufficient numbers and over areas extensive enough to assure them from becoming extinct through any agency within man's control.⁵⁰⁴

The nineteen parties to the Convention, which is only open to member states of the OAS, agree to explore the possibility of establishing national parks, national reserves, nature monuments and strict wilderness reserves as defined by the Convention.⁵⁰⁵ National parks are absolutely protected against exploitation for commercial profit, and there is to be no hunting, killing or capturing of fauna or collecting of flora in national parks except by or under the direction or

⁴⁹⁸ Art. 6. ⁴⁹⁹ Art. 5(9). ⁵⁰⁰ See www.lusakaagreement.org ⁵⁰¹ Art. 7.

⁵⁰² See also the Convention for the Conservation of the Biodiversity and the Protection of Wilderness Areas in Central America, Managua, 5 June 1992, in force 20 December 1994.

⁵⁰³ Washington, 12 October 1940, in force 1 May 1942, 161 UNTS 193; nineteen states became parties to the Convention.

⁵⁰⁴ Preamble. ⁵⁰⁵ Art. II(1).

control of the park authorities, or for authorised scientific investigations.⁵⁰⁶ Strict wilderness reserves are to be maintained, as far as practicable, 'inviolable' except for authorised scientific investigations or other uses consistent with the purposes for which the area was established.⁵⁰⁷

The Western Hemisphere Convention also requires parties to protect and preserve all other flora and fauna, to engage in scientific cooperation, to protect migratory birds, and to protect species listed in the single Annex to the Convention 'as completely as possible'.⁵⁰⁸ The Convention has general provisions establishing trade restrictions: the import, export and transit of protected fauna and flora is to be controlled and regulated by the issuing of export and transit authorisation certificates.⁵⁰⁹ The great weakness of the Convention is the absence of any institutions to oversee and ensure its implementation. Initiatives in the 1970s and 1990s to amend the Convention did not bear fruit. While it remains legally binding on its parties, it has been described as a 'sleeping convention' that is of limited practical value to most parties.⁵¹⁰

1978 Treaty for Amazonian Cooperation

The conservation of biodiversity is an important secondary objective of the 1978 Treaty for Amazonian Cooperation (1978 Amazonian Treaty).⁵¹¹ Its primary objective is to promote the harmonious development of the parties' Amazonian territories; the secondary objective is to ensure that these joint actions produce equitable and mutually beneficial results 'and achieve also the preservation of the environment, and the conservation and rational utilisation of the natural resources of those territories'.⁵¹² The 1978 Amazonian Treaty is mainly concerned with economic development, as reflected in the language stating that the use of natural resources is 'a right inherent in the sovereignty of each state' which may only be restricted by international law.⁵¹³ This provision reflects the concern that evidently existed, even at this relatively early period in the development of international environmental law, about interference from countries outside the region seeking to influence future development in the Amazon forest. The 1978 Treaty is silent as to the limitations that might be established by international law on environmental grounds. Measures of environmental protection required under the Treaty, which are designed to maintain the 'ecological balance' of the region and to preserve species in the context of rationally planned exploitation of flora and fauna, are limited simply to promoting scientific research and exchanging information.⁵¹⁴ The Treaty's institutional arrangements comprise ad hoc meetings of the parties' ministers of foreign affairs, annual meetings of the Amazonian Cooperation Council, a secretariat, Permanent National Commissions, and Special Commissions which may be set up to study specific problems or matters.⁵¹⁵ The right of any state to exercise a veto on important questions is guaranteed: decisions taken by the ministers or the Council are taken by unanimous vote of all parties, although decisions by the Special Commissions are adopted by unanimous vote only of those parties participating.⁵¹⁶

⁵⁰⁶ Art. III. ⁵⁰⁷ Art. IV.

⁵⁰⁸ Arts. V-VIII. The Annex comprises a compilation of the national lists of the parties, rather than an agreed list of general application, and has not been revised since 1967.

⁵⁰⁹ Art. IX.

⁵¹⁰ Bowman, Davies and Redgwell, *Lyster's International Wildlife Law*, 242. Other forms of cooperation in the wider western hemisphere do exist, including, in particular, the Western Hemispheric Migratory Species Initiative established, inter alia, to improve communication on conservation issues of common interest, and to build country capacity to conserve and manage migratory species. See www.oas.org/dsd/WHMSI/English/Indexv2.htm

⁵¹¹ Brasilia, 3 July 1978, in force 2 August 1980, 17 ILM 1045 (1978); eight states are party. ⁵¹² Art. I.

⁵¹³ Art. IV. ⁵¹⁴ Art. VII. ⁵¹⁵ Arts. XX-XXIV. ⁵¹⁶ Art. XXV.

In 1989, the parties to the 1978 Amazonian Treaty adopted the Amazon Declaration, which reiterated support for the preservation of Amazonian resources for present and future generations and declared that the defence of the Amazonian environment was one of the essential objectives of the Treaty.⁵¹⁷ It provides little guidance, however, as to how that objective is to be attained, or what it means in practice. The emphasis is rather on linking environmental protection and economic development, especially by denouncing the burden of foreign debts owed by countries of the region. The Amazonian Declaration objects to conditionalities imposed in the allocation of international resources, and emphasises the need for the concerns of the North over the Amazon region to be translated into financial and technological support and assistance.

In 1998, the parties to the 1978 Amazonian Treaty adopted an amending Protocol providing for the establishment of the Amazonian Cooperation Treaty Organization, which was established following the Protocol's entry into force in 2002.⁵¹⁸ The 1978 Treaty thus provides a basis for numerous cooperative activities in the Amazon region aimed at conservation and sustainable use of biodiversity.

Pacific Islands Region

The states of the Pacific region have adopted a number of treaties aimed at conserving and protecting their flora and fauna. Apart from the 1985 Rarotonga Treaty, which prohibits nuclear activities in the region,⁵¹⁹ and the 1995 Waigani Convention on hazardous and radioactive wastes,⁵²⁰ the main regional instruments are the 1976 Convention on the Conservation of Nature in the South Pacific (1976 Apia Convention)⁵²¹ and a Regional Seas Agreement, the 1986 Noumea Convention.⁵²²

The Apia Convention seeks to contribute to the 'maintenance of the capacity of the earth to produce essential renewable natural resources' and to safeguard 'representative samples of natural ecosystems, and . . . the heritage of wildlife and its habitat', while providing for 'customary use of areas and species in accordance with traditional cultural practices'.⁵²³ Parties must establish 'protected areas' (national parks and national reserves).⁵²⁴ The established size of the national parks may only be altered after the 'fullest examination', and they may only be exploited commercially after such examination.⁵²⁵ Fauna and flora in national parks, including migratory species, are protected from 'unwise exploitation and other threats that may lead to their extinction'.⁵²⁶ National reserves are, as far as practicable, to be maintained as 'inviolable'.⁵²⁷ Each party is to establish its own list of fauna and flora threatened with extinction, which it is to protect 'as completely as possible as a matter of special urgency and importance', and to carefully consider the introduction of new species.⁵²⁸

⁵¹⁷ Manaus, Brazil, 6 May 1989, 28 ILM 1303 (1989).

⁵¹⁸ Amendment Protocol, Caracas, 14 December 1998, see www.otca.pagina-oficial.com ⁵¹⁹ See Chapter 12, p. 602.

⁵²⁰ See Chapter 12, pp. 624–5.

⁵²¹ Apia, 12 June 1976, in force 28 June 1990, IELMT 976:45; five states are party.

⁵²² See Chapter 11, pp. 465–72. Art. 14 of the Noumea Convention addresses specially protected areas and the protection of wild flora and fauna.

⁵²³ Preamble and Art. VI. ⁵²⁴ Art. II(1). ⁵²⁵ Art. III(1) and (2). ⁵²⁶ Arts. III(3) and V(1). ⁵²⁷ Art. IV.

⁵²⁸ Art. V(2)–(4).

The Apia Convention did not establish mechanisms for Meetings of the Parties, and the secretariat functions have been provided by the secretariat of the South Pacific Regional Environment Programme (SPREP).⁵²⁹ The first Meeting of the Parties to the Apia Convention was held in 1991. However, only five states in the region became parties to the Apia Convention. In 2006, at the eighth joint Meeting of the Parties to the Apia and Noumea Conventions, it was proposed to suspend the operation of the Apia Convention in light of, inter alia, the overlap with the Biodiversity Convention, and particularly the programme of work on island biodiversity⁵³⁰ adopted thereunder.⁵³¹ All the parties to the Apia Convention are parties to the Biodiversity Convention. Thus, at present, the Apia Convention has not been terminated or denounced, but in effect its operation has been suspended, and further Meetings of the Parties have not been held since 2006.

Overall coordination of nature conservation activities in the Pacific islands region now rests with SPREP, which was established as an autonomous regional organisation in 1993 under the Agreement Establishing the South Pacific Regional Environment Programme.⁵³²

Europe

Under the auspices of the Council of Europe, a number of treaties and other international agreements addressing the conservation of biological diversity have been adopted and implemented which establish general principles and rules. While EU law lies outside the scope of this book, for EU member states secondary legislation in the EU constitutes an important framework for action on biodiversity, as well as on biosafety.⁵³³

1979 Berne Convention

The Berne Convention on the Conservation of European Wildlife and Their Natural Habitats (1979 Berne Convention) was negotiated under the auspices of the Council of Europe.⁵³⁴ Initially, the Convention had mostly developed country parties, including the EU, but membership now includes four non-members of the Council of Europe in Africa. It has three objectives: to conserve wild flora and fauna and their habitats; to promote cooperation between states; and to give particular attention to endangered and vulnerable species, including endangered and vulnerable migratory species.⁵³⁵ It applies to all species and their habitats, regardless of their scarcity, and is applicable to visiting migratory species that are not confined to Europe and to

⁵²⁹ Art. VIII. They were originally provided by the South Pacific Commission. ⁵³⁰ See CBD, Decision VIII/1.

⁵³¹ SPREP, *Report on the Joint Eighth Conference of the Parties to the Apia and Noumea (SPREP) Conventions*, 7, 10 and 13 September 2006, 8–11.

⁵³² Apia, 16 June 1993, in force 31 August 1995, ATS No. 24, 1995; eighteen states are party.

⁵³³ See especially: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L206, 22 July 1992, 7; Directive 2009/147/EC on the conservation of wild birds, OJ L20/7, 26.01.10, 1; Regulation (EC) No. 1946/2003 of 15 July 2003 on transboundary movement of genetically modified organisms, OJ L287, 5 November 2003, 1.

⁵³⁴ Berne, 19 September 1979, in force 1 June 1982, UKTS No. 56 (1982), Cmnd 8738. See generally the Explanatory Report Concerning the Convention on the Conservation of European Wildlife and Natural Habitats (Council of Europe, 1979), www.nature.coe.int/english/cadres/berne.htm. By 30 March 2017, the Convention had 51 parties. It should be noted that numerous parties have attached reservations in relation to the Convention's Appendices to their acceptance of the Convention, as permitted under Art. 22.

⁵³⁵ Art. 1; 'endangered and vulnerable' is broader than 'threatened'.

European species of flora and fauna found outside the European continent. To give effect to the objectives, the parties are required to take protective measures

to maintain the population of wild flora and fauna at, or adapt it to, a level which corresponds in particular to ecological, scientific and cultural requirements while taking account of economic and recreational requirements and the needs of sub-species, varieties or forms at risk locally.⁵³⁶

More generally, parties must: promote national conservation policies; have regard to conservation in regional planning policies and pollution abatement; promote education and the dissemination of information; coordinate research; and encourage the reintroduction of species while strictly controlling the introduction of non-native species.⁵³⁷

The 1979 Berne Convention includes specific obligations. Parties must take special measures to ensure the conservation of habitats of wild flora and fauna species which are listed as strictly protected in Appendices I and II, and give 'special attention' to the protection of areas of importance to migratory species specified in Appendices II and III.⁵³⁸ The deliberate picking, collecting, cutting or uprooting of species of wild flora listed in Appendix I is prohibited, and their possession or sale is prohibited.⁵³⁹ The deliberate capture, keeping, killing, damage, destruction or disturbance of wild fauna species listed in Appendix II is also prohibited, as is the possession of and internal trade in these species or their parts.⁵⁴⁰ Listed fauna species are to be protected, and their exploitation regulated to keep them out of danger. All indiscriminate means of capture and killing, including those listed in Appendix IV, and all means capable of causing local disappearance or serious disturbance to populations are prohibited.⁵⁴¹ The parties are free to adopt stricter conservation measures.⁵⁴²

Under Article 9, the Convention permits exceptions to the prohibitions set out in Articles 4–8, although they are subject to the fulfilment of general and specific conditions. The general conditions require that there must be 'no other satisfactory solution' and that 'the exception will not be detrimental to the survival of the population concerned'.⁵⁴³ The specific conditions only permit exceptions:

- for the protection of flora and fauna;
- to prevent serious damage to crops, livestock, forests, fisheries, water and other forms of property;
- in the interest of public health and safety, air safety or overriding public interests;
- for research and education, of repopulation, of reintroduction and for necessary breeding; and
- to permit, under strictly supervised conditions, on a selective basis and to a limited extent, the taking, keeping or other judicious exploitation of certain wild animals and plants in small numbers.⁵⁴⁴

These provisions include numerous ambiguities. For example, in Article 6(b), does the reference to 'deliberate' damage or destruction exclude damage or destruction caused by activities that do not have such damage or destruction as their primary purpose, or is it sufficient that such damage or destruction should be a reasonably foreseeable consequence of those activities?

⁵³⁶ Art. 2; this provision is very similar to Art. 2 of the 1979 EC Wild Birds Directive. ⁵³⁷ Arts. 2, 3 and 11.

⁵³⁸ Arts. 4 and 10. ⁵³⁹ Art. 5. ⁵⁴⁰ Art. 6. ⁵⁴¹ Arts. 7 and 8. ⁵⁴² Art. 12. ⁵⁴³ Art. 9(1).

⁵⁴⁴ Art. 9(1).

The former interpretation would exclude activities such as road-building which are not deliberately intended to cause damage or destruction but will often have that effect as a matter of course. With regard to the exceptions, what is meant by ‘other overriding public interests’, and do such interests include economic interests? The Explanatory Report provides some guidance, suggesting that all construction works would be included within the definition of ‘deliberate’ damage or destruction, and stating that exceptions may be made for construction works subject to the fulfilment of the conditions in Article 9 and the provisions in Article 3(2) concerning planning and development policies.⁵⁴⁵

Implementation of the 1979 Berne Convention is entrusted to a Standing Committee composed of a representative of each party, with a range of functions, including the power to recommend measures and make proposals for improving the effectiveness of the Convention.⁵⁴⁶ It reports to the Committee of Ministers of the Council of Europe, and may adopt amendments to the Appendices by a two-thirds majority of the parties, which enter into force for all parties that have not notified objections, provided that less than one-third of parties have entered such objections.⁵⁴⁷ The Standing Committee meets regularly and has amended the Appendices on several occasions.⁵⁴⁸ The Convention has in place a ‘case files’ system, established by a decision of the Standing Committee, for complaints by NGOs or private citizens about possible violations of the Convention, under which some 168 complaints had been initiated by January 2017.⁵⁴⁹

1982 Benelux Convention

The Benelux Convention on Nature Conservation and Landscape Protection (1982 Benelux Convention) provides a framework for concerted action and cooperation in the conservation, management and rehabilitation of the natural environment and landscapes.⁵⁵⁰ It goes beyond the 1979 Berne Convention by requiring the *harmonisation* of policy principles, instruments, laws and regulations, information exchange, information and education campaigns, and ‘coordinated implementation of agreements concluded within a wider international framework’. The Convention calls for effective protection activities, including, inter alia, the development of ‘protection and management concepts for transboundary natural areas and landscapes of value’ and the establishment of inventories of such areas, as well as reciprocal consultation on development projects that might adversely affect such transboundary areas.⁵⁵¹

1991 Alpine Convention

The 1991 Convention on the Protection of the Alps (1991 Alpine Convention)⁵⁵² signals a move towards the international regulation of ecosystems that cross national boundaries; it was also

⁵⁴⁵ Explanatory Report Concerning the Convention on the Conservation of European Wildlife and Natural Habitats, para. 41; cf. Art. 16(1) of the 1992 EU Habitats Directive, where derogations for imperative reasons of overriding public interest include those of a social or economic nature.

⁵⁴⁶ Arts. 13 and 14. ⁵⁴⁷ Arts. 15 and 17.

⁵⁴⁸ See www.coe.int/t/dg4/cultureheritage/nature/Berne/Appendices_en.asp

⁵⁴⁹ On compliance, see Chapter 5. See also *Register of Bern Convention Case Files*, available at <https://wcd.coe.int/ViewDoc.jsp?p=&tid=2451705&Site=&BackColorInternet=B9BDEE&BackColorIntranet=FFCD4F&BackColorLogged=FFC679&direct=true>

⁵⁵⁰ Brussels, 8 June 1982, in force 1 October 1983, 2 SMTE 163; three states are party. ⁵⁵¹ Art. 3.

⁵⁵² Salzburg, 7 November 1991, in force 6 March 1995; 31 ILM 767 (1992); eight Alpine states and the EU are party. See generally T. Treves, L. Pineschi and A. Fodella (eds.), *International Law and the Protection of Mountain Areas* (Milan: Giuffrè, 2002).

the first international legal instrument to address the environmental issues of mountain regions.⁵⁵³ The Convention establishes a general framework to apply the precautionary principle, the polluter pays principle and the principle of cooperation to preserve and protect the Alps, taking into account the equitable interests of all Alpine states and ensuring the sustainable use of natural resources.⁵⁵⁴ The Convention envisages protocols and other measures to address specific issues, including: the promotion of cultural identity; the protection of air, land, soil and water; the preservation of flora and fauna and mountain forests; the conservation of energy and reduction of waste; and sustainable tourism and transport.⁵⁵⁵ An Alpine Conference of the Parties meets every two years to adopt measures on research and systematic observation and to adopt protocols and amendments.⁵⁵⁶ A Permanent Committee of the Alpine Conference is established as the executive organ, with support from a permanent secretariat (the Commission Internationale pour la Protection des Alpes).⁵⁵⁷

2003 Carpathians Convention

The Framework Convention on the Protection and Sustainable Development of the Carpathians (2003 Carpathians Convention) was adopted in 2003 and has seven parties.⁵⁵⁸ The parties have also ratified a Protocol on the Conservation and Sustainable Use of Biological and Landscape Diversity,⁵⁵⁹ and six have become parties to a Protocol on Sustainable Forest Management.⁵⁶⁰

In relation to biodiversity and landscapes, the Convention requires parties to pursue policies aimed at conservation, sustainable use and restoration of biological and landscape diversity throughout the Carpathians, and to ensure a high level of protection and sustainable use of natural and semi-natural habitats and species of flora and fauna characteristic of the Carpathians, particularly endangered and endemic species and large carnivores. The Protocol sets out more specific measures related to these obligations, and also addresses prevention of the introduction of invasive alien species and genetically modified organisms likely to have adverse environmental impacts. It further addresses, inter alia, support and cooperation for the Carpathian Network of Protected Areas.

Asia

The conservation of nature and biodiversity in Asia is addressed at the regional level by only one multilateral subregional agreement, and that agreement is not in force. Given the large proportion of the world's population that lives in Asia, the growing economic importance of the region, and the fact that six of the seventeen 'megadiverse' countries are located in Asia, further efforts

⁵⁵³ See also Agenda 21, Chapter 13, 'Managing Fragile Ecosystems: Sustainable Mountain Development'. ⁵⁵⁴ Art. 2.

⁵⁵⁵ Art. 3. Nine Protocols have been adopted, dealing with nature conservation and landscape protection (1994), mountain farming (1994), regional management and sustainable development (1994), mountain forests (1996), tourism (1998), energy (1998), soil protection (1998), transport (2000) and dispute settlement (2000). The Protocol for the implementation of the Alpine Convention in the field of Nature Protection and Landscape Conservation entered into force on 18 December 2002.

⁵⁵⁶ Arts. 3, 6 and 7. ⁵⁵⁷ Arts. 8 and 9.

⁵⁵⁸ Kiev, 22 May 2003, in force 4 January 2006. The parties are the Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia and Ukraine.

⁵⁵⁹ Bucharest, 19 June 2008, in force 28 April 2010.

⁵⁶⁰ Bratislava, 27 May 2011, in force 21 October 2013. Poland has not signed this Protocol. Further Protocols to the Convention address sustainable tourism and sustainable transport.

to develop regional cooperation are warranted. The Agreement on the Conservation of Nature and Natural Resources adopted by the Association of Southeast Asian Nations, adopted in 1985 (1985 ASEAN Agreement)⁵⁶¹ has not attracted the required ratification by six of the ten members of ASEAN to enter into force.⁵⁶² Nevertheless, it merits some consideration since it introduces innovative legal provisions compared with earlier regional biodiversity conservation agreements, including efforts to address conservation and economic development in an integrated manner, based on a 'sustainable use' standard which relies upon an ecosystem approach and a consideration of the capacities of the parties.

The 1985 ASEAN Agreement commits the parties to adopt measures and conservation strategies

necessary to maintain essential ecological processes and life-support systems, to preserve genetic diversity, and to ensure the sustainable utilisation of harvested natural resources under their jurisdiction in accordance with scientific principles and with a view to attaining the goal of sustainable development [and to] ensure that conservation and management of natural resources are treated as an integral part of development planning at all stages and at all levels.⁵⁶³

Chapter II ('Conservation of Species and Ecosystems') of the Agreement commits parties to 'maintain maximum genetic diversity' by acting for the conservation and survival of all species under their jurisdiction and control, to protect endangered species and to protect the habitats of endangered species listed on Appendix I.⁵⁶⁴ The sustainable use of harvested species should be ensured by implementing management plans aimed at 'preventing decrease in the size of any harvested population to levels below those which ensure its stable recruitment', by maintaining the 'ecological relationship' between harvested, dependent and related populations, and by restoring depleted populations to levels which ensure 'stable recruitment'.⁵⁶⁵ To this end, harvesting activities will be subject to a permit system, a prohibition on indiscriminate taking and use and on harvesting during certain periods, and regulated trade and possession.⁵⁶⁶ Conservation of species and ecosystems includes measures to conserve vegetation cover, especially forests, soil conservation, land rehabilitation, the conservation of underground and surface water resources, and air quality management.⁵⁶⁷

The 1985 ASEAN Agreement addresses forest protection by calling for the establishment of forest reserves, reforestation and afforestation plans, and by requiring parties to ensure, to the maximum extent possible, the conservation of their natural forests (particularly mangroves) and to develop forestry management plans which maintain the potential 'for optimum sustained yield and avoiding depletion of the resource capital'.⁵⁶⁸

Under Chapter III, parties must prevent, control and reduce degradation of the natural environment and polluting discharges and emissions. Again, the provisions on environmental degradation are innovative and progressive in addressing the need to promote environmentally sound agricultural practices and industrial processes and products, including the use of

⁵⁶¹ Kuala Lumpur, 9 July 1985, not in force, 15 *Environmental Policy and Law* 64 (1985).

⁵⁶² Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

⁵⁶³ Arts. 1 and 2(1). ⁵⁶⁴ Arts. 3 and 5. Amendments to the Agreement and to the Appendix require consensus.

⁵⁶⁵ Art. 4(1). ⁵⁶⁶ Art. 4(2). ⁵⁶⁷ Arts. 6–9. ⁵⁶⁸ Art. 6(2).

economic and fiscal incentives.⁵⁶⁹ Without specifically mentioning the polluter pays principle, the Agreement reflects its spirit by requiring parties to undertake

as far as possible, to consider the originator of the activity which may lead to environmental degradation responsible for its prevention, reduction and control as well as, wherever possible, for rehabilitation and remedial measures required.⁵⁷⁰

Chapter IV supports land-use planning to achieve 'optimum sustainable land use' based on the 'ecological capacity' of the land, the establishment of protected areas, and environmental impact assessment.⁵⁷¹ In relation to protected areas, the Agreement prohibits the use or release of toxic substances or pollutants as well as, to the maximum extent possible, activities outside the protected area that are likely to cause disturbance or damage.⁵⁷² Chapter V of the Agreement proposes measures for scientific research, education, public participation and administrative machinery.⁵⁷³ Chapter VI envisages international monitoring, research, the exchange of data and information, and the conservation and harmonious utilisation of shared natural resources.⁵⁷⁴ The Agreement was also the first to integrate a large part of Principle 21 of the Stockholm Declaration into the operational part of an international treaty.⁵⁷⁵

The institutional arrangements for implementing the Agreement comprise Meetings of the Parties, a secretariat, and national focal points for the coordination and channelling of communications.⁵⁷⁶

While the 1985 ASEAN Agreement has not entered into force, there are other forms of cooperation related to biodiversity within ASEAN. In 2005, an agreement was adopted to establish an ASEAN Centre for Biodiversity.⁵⁷⁷ The mandate of the Centre is to facilitate cooperation and coordination among ASEAN member states on the conservation and sustainable use of biodiversity, and fair and equitable benefit sharing, within the region.

CONCLUSIONS

The conservation of biodiversity presents enormous regulatory challenges to international law. The threats to biodiversity come from a multitude of sources, requiring a comprehensive approach to regulation of a broad range of human activities and accommodation of diverse interests and priorities. At the same time, the knowledge base from which to formulate and implement action to address biodiversity loss remains incomplete. Moreover, the conservation of biodiversity illustrates clearly the range of difficulties which exist in developing and applying rules of international law to resources which frequently do not respect national boundaries or are found in areas beyond national jurisdiction, and which require full consideration to be given to the social, cultural, ecological and economic values which different people place on different species, habitats and ecosystems. The conservation of biodiversity has, for many individuals and communities, a particularly important symbolic value, which also raises issues about the balance

⁵⁶⁹ Art. 10(a)–(c). ⁵⁷⁰ Art. 6(d). ⁵⁷¹ Arts. 12–14. ⁵⁷² Art. 13(5)(b) and (c). ⁵⁷³ Arts. 15–17.

⁵⁷⁴ Arts. 18 and 19. ⁵⁷⁵ Art. 20(1). ⁵⁷⁶ Arts. 21–23.

⁵⁷⁷ Agreement on the Establishment of the ASEAN Centre for Biodiversity, Bangkok, 12 September 2005, in force 8 July 2009. See www.aseanbiodiversity.org

to be struck between the conservation of nature and the conduct of human behaviour; the role of law must, ultimately, be limited to reflecting the values which humans ascribe to other forms of life. From the cumulative experience within the existing treaty arrangements, it is possible to obtain a sense of the effectiveness of various regulatory techniques. Many of the lessons learned about governance and the conservation of biodiversity apply equally to other areas of international environmental law. Perhaps the most important lesson relates to implementation and enforcement. It is clear that the adoption of regulations and the development of innovative regulatory techniques will not in themselves conserve biodiversity: international obligations need to be implemented and enforced, locally, regionally and globally, through the joint efforts of citizens, governments and international organisations. International agreements addressing biodiversity frequently contain provisions addressing capacity-building, and/or have designed and implemented programmes to assist developing country parties to build the legal frameworks and human and institutional capacity to implement and enforce national implementing laws. These efforts are now increasingly backed up by financial support through the Global Environment Facility and inputs from other multilateral and bilateral donors.

While supporting national implementation of international commitments on biodiversity is one aspect of the compliance question, another is establishing meaningful reporting and other mechanisms to monitor compliance where clear obligations are established under biodiversity-related agreements. The limited success of many existing legal arrangements derives from the lack of appropriate arrangements to address non-compliance, and the inability to adopt sanctions that can be enforced. In this regard, there is also much to be said for making greater use of the sanctions available under national legal systems.

International rules to address the conservation of biodiversity have been developed over a long period and reflect a consistent effort to balance economic development with protection of species and the habitats. International law and policymaking now reflect, at least in principle, a deeper understanding of the value of biodiversity to human life and well-being: the conservation and sustainable use of biodiversity is increasingly seen not as a barrier to poverty alleviation, but as an important contributor to it, and more broadly to progress towards achieving the Sustainable Development Goals. The CBD is framed increasingly as a 'sustainable development' instrument, rather than one limited to nature conservation, reflecting its roots in the UNCED process. In the UN Decade on Biodiversity,⁵⁷⁸ international action has been focused to a large extent on the Aichi Biodiversity Targets established by the Conference of the Parties to the CBD in October 2010. Alongside the Biodiversity Convention, other international and regional agreements outlined in this chapter can play an important role in achieving these targets, provided they are implemented effectively. In some instances, the other biodiversity-related treaties, such as CITES, contain more specific commitments, targeted at particular components of biodiversity or at addressing particular threats. In other cases, there may be overlaps. For instance, the parties to the Apia Convention (a regional convention covering the Pacific) determined that, since the Biodiversity Convention now covered the issues that the Apia Convention had been designed to address, the operation of the regional convention could be suspended. Other regional agreements have been adopted but have failed, to date at least, to enter into force. On the other hand, it is clear that there remain gaps in the international legal framework: a global convention

⁵⁷⁸ 2011–20. UN General Assembly Res. 65/161, A/RES/65/161.

addressing forests is one obvious gap that the international community seems in no rush to fill; the lack of regional arrangements in Asia is another. Moreover, there is clearly scope for further range state arrangements addressing various migratory species under the CMS, for forms of cooperation in the protection and management of transboundary ecosystems, or for instruments that facilitate regional cooperation in the enforcement of national laws for the conservation and sustainable use of biodiversity. Indeed, there may be much to be gained from rather more narrowly focused regional and subregional instruments of this type, and by practical arrangements for the sharing of information and experience, rather than the broader programmatic provisions of some of the existing regional arrangements, that often tend to replicate commitments already taken on by the parties under international agreements.

The growing focus on the concept of ecosystem services suggests that attaching economic value to biodiversity might promote better integration or mainstreaming of biodiversity considerations into other areas of policy. This remains a key challenge for achieving conservation objectives and the Aichi Biodiversity Targets. Unless ways are found, through law and other mechanisms, to achieve such integration, the indirect drivers or underlying causes of biodiversity loss will not be addressed. This requires enhanced efforts in domestic law and policymaking, but also calls for greater attention to the relationship of the biodiversity regime with other areas of international law and policy that govern some of the key direct and indirect drivers of biodiversity loss. In particular, it seems likely that the impacts of climate change, and of measures to mitigate and adapt to climate change, on biodiversity will be the subject of increasing attention in the coming years. But, as noted earlier in this chapter, the goals of conservation and sustainable use of biodiversity will not be achieved unless more effective ways are also found to build biodiversity considerations into other international regimes addressing, inter alia, trade, food security and the marine environment.

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11

Oceans, Seas and Marine Living Resources

CHAPTER OUTLINE

This chapter provides an overview of the international environmental rules that address problems affecting oceans: marine pollution, unsustainable fishing practices and habitat destruction. Its three sections consider the main global and regional treaties, case law and soft law instruments regarding:

1. protection of the marine environment from different sources of marine pollution, including land-based sources, dumping at sea, pollution from vessels, pollution from seabed activities and environmental emergencies;
2. conservation of marine living resources, including fisheries and other marine species, as well as matters such as driftnet fishing and illegal, unreported and unregulated fishing; and
3. marine biodiversity conservation, encompassing rules on the protection of species and habitats not addressed by UNCLOS or by the Convention on Biological Diversity, such as the conservation of marine biodiversity in areas beyond national jurisdiction.

INTRODUCTION

Oceans cover about 70 per cent of the Earth's surface, accounting for most of the Earth's water and making up more than 97 per cent of the biosphere.¹ The oceans nurture life and shape the planet's weather and climate. They create more than half of our oxygen and provide vital sources of protein, energy and minerals.² As described by some, 'Earth is a marine habitat'.³ The oceans provide food for a billion people, and are also a source of income and livelihood for millions. The FAO estimates that about 200 million people are employed in capture fisheries and aquaculture, and in related secondary activities.⁴

But oceans are experiencing serious environmental challenges, many of which have unknown consequences. In 1990, a report by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) on the 'State of the Marine Environment' highlighted

¹ S. Earle, *Sea Change: A Message of the Oceans* (New York: Putnam's, 1995), xiv.

² International Programme on the State of the Ocean, *Implementing the State of the Oceans Report* (2011), 2.

³ Earle, *Sea Change*, xiv, quoting NOAA biologist, Nancy Foster.

⁴ FAO, *The State of World Fisheries and Aquaculture* (2016), 126.

coastal pollution as the principal threat to the marine environment.⁵ In 2001, the same group of experts, while recognising that land-based activities continued to be the principal source of pollution, and anticipating the consequences of global warming, acknowledged that pollution is not the only, or even the most severe, threat to the oceans, and that direct physical damage to ecosystems and habitats and over-exploitation of the resources 'have even greater worldwide effects'.⁶

Current scientific literature acknowledges the existence of a more complex set of interactions between humans and the marine environment. The principal threats and stresses include: (1) overfishing; (2) habitat loss; (3) pollution (mainly coastal); (4) introduction of invasive species; and (5) climate change.⁷ The percentage of stocks fished at biologically unsustainable levels has increased continuously since the 1970s, with more than 30 per cent of stocks estimated as being overfished in 2013.⁸

Habitat destruction results from direct removal of habitat, including from damaging fishing practices, such as bottom trawling, but also from the alteration of the environment through activities that change inputs into the oceans or interfere with their natural functioning, including pollution.⁹ The largest source of pollution comes from land-based activities. In coastal areas, the release of nutrients into the water, causing eutrophication, and increased microbial activity through the provision of organic matter are the source of severe problems.¹⁰ In the open ocean, atmospheric inputs of carbon dioxide and nitrogen, and of solid debris such as plastics in the water column and on the seabed, are matters of special concern, as are the threats of exploration and extraction of minerals and hydrocarbons on or within the deep-ocean seabed.¹¹ The impacts of climate change on the oceans are not fully understood, but there is sufficient evidence to conclude that climate change is altering ocean ecosystems towards conditions not seen for millions of years. So far, the observed impacts include decreased productivity, altered food web dynamics and greater incidence of disease, among others.¹² One of the most studied phenomena related to climate change is ocean acidification, resulting from the absorption of carbon dioxide, which changes the naturally alkaline pH of the oceans, and can cause particular damage to coral reefs.¹³

⁵ GESAMP, *The State of the Marine Environment*, GESAMP Report No. 39 (1990), 1–3.

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⁸ FAO, *State of World Fisheries and Aquaculture*, 38; UNEP, *Global Synthesis, A Report from the Regional Seas Conventions and Action Plans for the Marine Biodiversity Assessment and Outlook Series* (2010), 9.

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¹⁰ *Ibid.*, 16. See also C. Nellemann and E. Corcoran (eds.), *Our Precious Coasts – Marine Pollution, Climate Change and the Resilience of Coastal Ecosystems* (UNEP, 2006), 15–24; International Programme on the State of the Ocean, *Implementing the State of the Oceans Report*, 42–5.

¹¹ GESAMP, *Pollution in the Open Oceans 2009–2013*, GESAMP Rep. Stud. No. 91 (2015), 55.

¹² IPCC, *Fifth Assessment Report, Observations: Ocean* (2013), 255; GESAMP, *Pollution in the Open Oceans 2009–2013*, 23; O. Hoegh-Guldberg and J. F. Bruno, 'The Impact of Climate Change on the World's Marine Ecosystems', 328 *Science* 1523 (2010). See also, for a description of a broader range of potential impacts of climate change on the ocean, Nellemann, Hain and Alder, *In Dead Water*, 27–41.

¹³ O. Hoegh-Guldberg, P. J. Mumby, A. J. Hooten et al., 'Coral Reefs Under Rapid Climate Change and Ocean Acidification', 318 *Science* 1737 (2007). See also generally Nellemann and Corcoran, *Our Precious Coasts*.

Against this background, science recognises that ocean problems must be tackled in an integrated manner, not in a piecemeal fashion.¹⁴ The cumulative effects of multiple ocean stressors, including fishing pressures and rising water temperatures, will force harmful changes that may not be reversible.¹⁵ The 2016 UN World Ocean Assessment acknowledged that ‘the ocean is a complex set of systems that are all interconnected’ and stressed the need to manage human activities that affect the ocean in an integrated manner.¹⁶ The notion of ‘integrated management’ presents formidable practical challenges, requiring changes to current governance models and rules, bringing together pollution prevention, fisheries management, and species and habitat protection.¹⁷ The ‘ecosystem approach’ is central to integrated management: since the parties to the Convention on Biological Diversity committed to that approach in 2000,¹⁸ it has become incorporated in several ocean instruments.¹⁹

The 1982 United Nations Convention on the Law of the Sea (UNCLOS), the principal instrument of international law in the field, provides a framework that clarifies the nature of sovereign rights over different portions of the oceans, and introduces some of the fundamental principles and duties of ocean conservation. However, UNCLOS does so in a rather fragmented and incomplete manner, separating the rules on prevention, reduction and control of marine pollution from the rules to conserve and manage living resources.²⁰ Partly because at the time of its negotiation oceans were not under the pressures they are today, the Convention fails to address a number of matters, such as the conservation of marine species and ecosystems, particularly in areas beyond national jurisdiction,²¹ and does not address the interaction between different ocean uses and stressors. In this sense, significant as it is, UNCLOS has not turned out to be ‘the constitution of the oceans’ initially envisaged. In 1992, even before UNCLOS entered into force, Agenda 21 acknowledged that UNCLOS provided the ‘international basis’ for the protection and sustainable development of the marine and coastal environment and its resources, but it also

¹⁴ GESAMP, *A Sea of Troubles*, GESAMP Report No. 70 (2001), 3.

¹⁵ GESAMP, *Pollution in the Open Oceans 2009–2013*, 54–5.

¹⁶ The First Global Integrated Marine Assessment (United Nations World Ocean Assessment I), UN Doc. A/70/112, 22 July 2015, Summary, 9. See www.worldoceanassessment.org. See also Chapter 54, Overall Assessment of Human Impact on the Oceans. This publication is fundamentally built upon existing assessments with the objective of strengthening the regular scientific assessment of the marine environment to enhance the scientific basis for policy making, and carried out as part of the UNGA Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, UNGA Res. 64/71(2010), paras. 173–83. It builds upon the previous ‘Assessment of assessments’, UN Doc. UNEP (DEPI)/RS.12 /4.

¹⁷ See Chapter 10.

¹⁸ According to the parties to the Convention on Biological Diversity, the ecosystem approach is a ‘strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way’, and is ‘based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems’ (Decision V/6 (2000), Section A).

¹⁹ The 1982 CCAMLR was one of the first instruments to incorporate the ecosystem approach: see further, A. Fabra and V. Gascón, ‘The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Ecosystem Approach’, 23 *International Journal of Marine and Coastal Law* 567 (2008). The 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem recognised the interaction between species and also the impact of human activity on ecosystems, including non-fishery activities: FAO Doc. C200/INF/25, Appendix I; Statement ‘Towards an Ecosystem Approach to the Management of Human Activities’. See also, First Joint Ministerial Meeting of the Helsinki and OSPAR Commissions, Bremen, 25–26 June 2003; Decision IG 17/6 (2008) by which the contracting parties to the Barcelona Convention decided to implement the ecosystem approach to the management of human activities that may affect the marine environment and adopted a roadmap for that purpose.

²⁰ See pp. 606–48, for conservation of marine living resources. ²¹ See p. 548.

recognised that it was necessary to take 'new approaches to marine and coastal area management and development . . . that are integrated in content and are precautionary and anticipatory in ambit'.²²

New approaches have indeed been taken. Regional arrangements have led to notable progress in some areas, particularly around efforts to abate regional seas pollution. Some agreements have resulted in states taking stronger measures than those foreseen by UNCLOS. For example, while UNCLOS did not prohibit dumping at sea, the OSPAR Convention has prohibited this activity. In addition, several regional initiatives have gradually tended towards greater integration in regulation, overcoming some of the initial fragmentation, and taking steps towards ensuring that their activities favour the conservation of marine living resources and habitat protection. In addition, as has occurred in other fields of environmental protection, a number of principles, such as the precautionary principle, the polluter pays principle, the ecosystem approach, access to environmental information and the use of best environmental practices and best techniques, many of them coined at UNCED, have also permeated oceans governance.²³

International courts and tribunals have contributed to the development of the law on the protection of the marine environment. Beyond recognising that Article 192 of UNCLOS applies to all states and activities,²⁴ judgments and awards have addressed other provisions under Part XII, and recognised that they apply to many activities, including fisheries. They have also confirmed that CITES and other international agreements inform the interpretation and application of UNCLOS.²⁵

The most recent chapter in the development of global rules to manage the oceans revolves around the development of an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. In 2015, states agreed on a treaty to address: marine genetic resources, including questions on the sharing of benefits; measures such as area-based management tools, including marine protected areas; environmental impact assessments; capacity-building and the transfer of marine technology.²⁶

Despite the significant development of rules to better manage the oceans and their resources, there are continued calls from states to do more and faster to reverse the current trend of ocean degradation. Agenda 21 in 1992, and notably, the WSSD Plan of Implementation in 2002,²⁷ identified many issues and emphasised the need to implement an ecosystem approach and promote 'integrated, multidisciplinary and multisectoral coastal and ocean development'.²⁸ In 2012, the outcome document from the Rio+20 summit²⁹ contributed to 17 Sustainable Development Goals in 2015.³⁰ Goal 14, whose objective is to 'conserve and sustainably use the oceans, seas and marine resources for sustainable development', sets many milestones to be achieved by 2020.³¹

²² Agenda 21, para. 17.1.

²³ See D. Freestone, 'Principles Applicable to Modern Oceans Governance', 23 *International Journal of Marine and Coastal Law* 385 (2008). See generally Chapter 6, pp. 201ff.

²⁴ *Southern Bluefin Tuna* cases, pp. 528–9. ²⁵ See e.g. *Chagos*, p. 560, and *South China Sea*, p. 552.

²⁶ UNGA Res. 69/292 (2015), para. 2.

²⁷ Plan of Implementation of the World Summit on Sustainable Development, para. 30ff. ²⁸ *Ibid.*, para. 30(d) and (e).

²⁹ UNGA Res. 66/228, annex.

³⁰ Transforming Our World: the 2030 Agenda for Sustainable Development, UNGA Res. 70/1, 23–4.

³¹ *Ibid.*, targets 14.1–14.7.

This chapter discusses global and regional treaty requirements, soft law instruments and case law concerning three main aspects of international environmental law pertaining to the oceans. The first section of the chapter deals with protection of the marine environment, principally from various sources of pollution. It discusses general requirements for marine pollution prevention under UNCLOS and regional arrangements, as well as specific requirements relating to land-based sources, dumping at sea, pollution from vessels, pollution from seabed activities and environmental emergencies. The second section examines rules governing the conservation of marine living resources, including fisheries, marine mammals and species of marine birds. In addition to global and regional rules and case law concerning fisheries management, it also considers regulation of harmful fishing practices and 'illegal, unreported and unregulated' (IUU) fishing. The final section concerns the conservation of marine biodiversity and ecosystems. It examines the general requirements of the international legal framework in this regard, together with protections instituted under regional arrangements and specific rules that have developed, or are in development, for deep-sea ecosystems and marine protected areas.

PROTECTION OF THE MARINE ENVIRONMENT

Introduction

Measures to protect the marine environment have been principally concerned with the regulation of efforts to combat pollution. Marine pollution results from a variety of sources including land-based sources, oil spills, untreated sewage, siltation, eutrophication, invasive species, and hazardous substances such as persistent organic pollutants (POPs), heavy metals and radioactive substances and acidification. In 1990, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) reported that coastal pollution was increasing and more widespread globally than in 1982. The principal cause was land-based activities, including intensive human settlement of coastal zones, which resulted in destruction of habitats, eutrophication from nutrients and sewage, overfishing and changes in sediment flows due to hydrological changes.³² GESAMP's comprehensive report of 2001 indicated that the situation had not improved. GESAMP confirmed that the state of the world's seas and oceans was deteriorating:³³ coastal activity was increasing the amounts of nitrogen and phosphorous entering the marine environment of coastal areas by between 50 and 200 per cent;³⁴ other sources of pollution included microbial contamination of seafood and beaches from the discharge of untreated human sewage, the fouling of the seas by plastic litter, the progressive build-up of chlorinated hydrocarbons, and the accumulation of tar on beaches from oil spills. A review of pollution in the open oceans between 2009 and 2013 identified several matters of particular concern: inputs of carbon dioxide, and inputs of nitrogen and iron, deep-water extraction of seabed resources, and litter and debris.³⁵

General rules concerning the protection of the marine environment from pollution are well developed at the regional and global levels, largely as a result of the treaties and other international acts adopted by states since 1972. More detailed and specific obligations govern

³² GESAMP Reports and Studies No. 39 (1990), jointly sponsored by IMO, FAO, UNESCO, WMO, WHO, IAEA, UNEP and the UN.

³³ GESAMP, *Sea of Troubles*, 1. ³⁴ *Ibid.*, 15. ³⁵ GESAMP, *Pollution in the Open Oceans*, 50–2.

dumping at sea and pollution from land-based sources, from seabed activities and from vessels. The rules on enforcement are now also relatively well developed, particularly at the regional level and with regard to some specific activities such as maritime traffic.³⁶ Action at the regional level, particularly in the North-East Atlantic, the Mediterranean and the Baltic, has led to improvements. Positive results have been seen in the reduction of pollution from persistent organic pollutants (POPs) (except in the Arctic), in oil discharges and spills and in industrial discharges.³⁷ However, even in regions where solutions to pollution have been found, these successes are offset by other increasing pressures, stemming from new sources of pollution in one area, or by moving the problem to a different area.³⁸

Development of International Law Rules

International rules for the protection of the marine environment are established under regional and global treaties, and other international acts, and the rules of customary law are reflected in these acts and non-binding soft law obligations. Early international efforts addressed discharges of oil, and can be traced back to the 1926 Preliminary Conference on Oil Pollution of Navigable Waters, held in Washington.³⁹ The first treaty to address oil pollution of the sea was the 1954 International Convention for the Prevention of Pollution of the Sea by Oil (1954 Oil Pollution Convention), based on a draft text from the 1926 Washington conference.⁴⁰ The 1954 Oil Pollution Convention was followed by environmental protection provisions in the 1958 High Seas Fishing and Conservation Convention,⁴¹ the 1958 Convention on the Continental Shelf,⁴² and the 1958 Convention on the High Seas.⁴³

In 1959, the IMCO (now IMO) Assembly assumed responsibility for the 1954 Oil Pollution Convention and many of the UN's functions in relation to oil pollution.⁴⁴ Subsequent international efforts were often triggered by a major oil spill such as the accidents involving the *Torrey Canyon* in 1967, the *Amoco Cadiz* in 1978, the *Exxon Valdez* in 1989 and the *Prestige* in 2002. These and other incidents led to the adoption under IMO auspices of the 1969 Intervention Convention, the 1969 (now 1992) CLC, the 1971 (now 1992) Oil Pollution Fund Convention, and the various amendments to MARPOL 73/78 requiring double hulls on new oil tankers,⁴⁵ and, more recently, first indications that certain states could act unilaterally to limit rights of passage even within their EEZ.⁴⁶ Following the *Torrey Canyon* accident, the UN General Assembly gave

³⁶ See Chapter 5 on enforcement generally.

³⁷ Nellemann and Corcoran, *Our Precious Coasts*, 15. Oil discharges and spills have been reduced by 63 per cent compared to the mid 1980s, and tanker accidents have gone down by 75 per cent.

³⁸ See generally on sources of marine pollution, the First Global Integrated Marine Assessment, Part V. See also UNEP, *Global Synthesis, A Report from the Regional Seas Conventions and Action Plans for the Marine Biodiversity Assessment and Outlook Series* (2010), 9.

³⁹ *Report of the Preliminary Conference on Oil Pollution of Navigable Waters*, 8–16 June 1926 (US Government Printing Office, 1926).

⁴⁰ London, 12 May 1954, in force 26 July 1958, 327 UNTS 3, as amended in 1962, 1969 and 1971.

⁴¹ Geneva, 29 April 1958, in force 20 March 1966; 559 UNTS 285.

⁴² Geneva, 29 April 1958, in force 10 June 1964; 499 UNTS 311.

⁴³ Geneva, 29 April 1958, in force 30 September 1962; 450 UNTS 82. ⁴⁴ ECOSOC Res. 537A (XVIII) (1959).

⁴⁵ See pp. 488–92.

⁴⁶ In November 2002, France, Spain and Portugal indicated that they would undertake unilateral actions to prevent passage through their EEZs of certain old ships without double hulls, following the accident involving the *Prestige*, and France apparently excluded some such ships. The actions have been condemned by shipping bodies as contravening UNCLOS: see 'Shipping Bodies Condemn European Tanker Expulsions', 13 December 2002, www.planetark.org

increased attention to the protection of the marine environment,⁴⁷ and in 1969 it adopted a resolution entitled ‘Promoting Effective Measures for the Prevention and Control of Marine Pollution’.⁴⁸ Marine pollution was an important issue at the Stockholm Conference, and Principle 8 of the 1972 Stockholm Declaration called on states to ‘take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea’.⁴⁹ The Stockholm Conference did not adopt a proposed global convention on ocean dumping as the text had not been completed. The United States had introduced a text in 1971 at the IMO Intergovernmental Working Group on Marine Pollution,⁵⁰ but it was not until December 1972 that the global Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972 London Convention) was actually adopted.⁵¹ This followed by several months the adoption of the regional Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (1972 Oslo Dumping Convention).⁵²

In 1973, the International Convention for the Prevention of Pollution from Ships (MARPOL 73) was adopted under IMO auspices,⁵³ and in 1976 UNEP established its Regional Seas Programme, which has led to over forty regional treaties.⁵⁴ In 1982, the international community finally adopted the United Nations Convention on the Law of the Sea (UNCLOS), addressing pollution of the marine environment comprehensively with a view to establishing rules and standards of global application. During 1992, a ‘second generation’ of regional environmental treaties was introduced with the adoption of the 1992 Convention on the Protection of the Baltic (1992 Baltic Sea Convention)⁵⁵ (to supersede the 1974 Baltic Convention) and the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (1992 OSPAR Convention) (to supersede the 1972 Oslo Dumping Convention and the 1974 Paris Convention). Both of the 1992 instruments adopted a more comprehensive approach by addressing marine pollution from all sources, and introduced new principles, substantive rules and institutional arrangements. This approach is now reflected in other regional instruments developed in the framework of the Regional Seas Programme of UNEP.

Marine environment protection rules fit into two broad categories: global rules (of which the 1982 UNCLOS is the most comprehensive, and the 1972 London Convention and MARPOL 73/78 the most specific) and regional rules. The second category includes treaties under the UNEP Regional Seas Programme, and those which are ad hoc regional and subregional arrangements, such as OSPAR or the special rules established for the Antarctic.⁵⁶

⁴⁷ See e.g. UNGA Res. 2414 (XXII) (1968).

⁴⁸ UNGA Res. 2566 (XXIV) (1969). This called on the UN to: prepare reports for the 1972 Stockholm Conference; review harmful substances and wastes which might affect human health and activities in the marine environment and coastal area, and national and international activities for prevention and control of marine pollution; and make suggestions for comprehensive action and improved international coordination.

⁴⁹ See generally P. S. Thacher, ‘Assessment and Control of Marine Pollution: The Stockholm Recommendations and Their Efficacy’, 8 *Stanford Journal of International Studies* 79 (1973).

⁵⁰ 10 ILM 1021 (1971).

⁵¹ London, Mexico City, Moscow and Washington, 29 December 1972, in force 30 August 1975, 1046 UNTS 120; see pp. 480–3.

⁵² Oslo, 15 February 1972, in force 7 April 1974, 932 UNTS 3. ⁵³ See p. 488. ⁵⁴ See pp. 465–72.

⁵⁵ Helsinki, 9 April 1992, in force 17 January 2000; IMO Doc. LDC.2/Circ.303, 10 August 1992.

⁵⁶ See Chapter 13, pp. 663–44.

Global Rules: UNCLOS

The 1982 UNCLOS aims to establish 'a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilisation of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment'.⁵⁷ It is one of the most far-reaching and influential of global environmental agreements, and is now widely supported, with 161 parties. Although UNCLOS only entered into force in 1994, more than ten years after it was signed, it has influenced the development of regional rules for the protection of the marine environment, as well as broader international environmental law. Its provisions on the protection and preservation of the marine environment are considered by many states to reflect generally applicable principles or rules of customary law, as evidenced by the reference in the Preamble to the 1992 OSPAR Convention that recalls the relevant provisions of customary law reflected in Part XII of UNCLOS. Agenda 21 endorsed the view that the provisions of UNCLOS on protection and preservation of the marine environment reflect international law.⁵⁸ The legal force of principles established in UNCLOS as customary obligations is further supported by the widespread state practice pursuant to treaty and national rules which address particular sources of marine pollution as set out in Part XII.

One of the main objectives of UNCLOS is the prevention, reduction and control of marine pollution. For the purpose of this objective, UNCLOS establishes rules on information, scientific research, monitoring, environmental assessment, enforcement (including developing rules in relation to enforcement by coastal states and port states)⁵⁹ and liability.⁶⁰ Part XII of UNCLOS specifically addresses the 'protection and preservation of the marine environment', although principles and rules on environmental protection may also be found throughout the Convention: among the various provisions, UNCLOS authorises coastal states to adopt certain laws relating to innocent and transit passage through territorial seas, straits and archipelagic sea lanes for the preservation of the environment of the coastal state and the prevention, reduction and control of pollution,⁶¹ and it provides for coastal state jurisdiction (in accordance with the Convention) with regard to protection and preservation of the marine environment of the EEZ.⁶² Part XII comprises forty-six Articles, divided into eleven Sections, which elaborate upon the general provisions of Section 1, which includes the primary obligation of all states 'to protect and preserve the marine environment'.⁶³ Drawing upon the language of Principle 21 of the

⁵⁷ Preamble.

⁵⁸ Agenda 21, paras. 17.1 and 17.22; this view was stated to be without prejudice to the position 'of any state with respect to signature, ratification or accession to the Convention' or the 'position of states which view the Convention as having a unified character'.

⁵⁹ See Chapter 5. ⁶⁰ See Chapter 16, pp. 779–90. ⁶¹ Arts. 21(1)(f), 42(1)(b) and 54.

⁶² Art. 56(1)(b)(iii); in exercising their rights, coastal states are to 'have due regard to the rights and duties of other States and shall act in a manner compatible with the provisions of the Convention' (Art. 56(2)). The rights of other states include freedom of navigation in the EEZ (Art. 58(1)). Following the sinking of the *Prestige* involving an oil spill off the west coast of Spain on 19 November 2002, the EU adopted in 2003 a Regulation, which banned the transport to or from ports of the member states of heavy grades of oil in single-hull oil tankers. This measure was followed by the adoption by the IMO in December 2003 of an accelerated schedule to phase out single-hull tankers, which after 5 April 2005 banned the carriage of heavy grade oil in single-hull tankers. See Regulation (EC) No. 1726/2003 of 22 July 2003, amending Regulation (EC) No. 417/2002 on the accelerated phasing-in of double-hull or equivalent design requirements for single-hull oil tankers, OJ L249, 1 October 2003, and p. 490, on MARPOL regulations concerning double hulls.

⁶³ Art. 192.

Stockholm Declaration, UNCLOS declares that 'states have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment'.⁶⁴

This general obligation is further elaborated, and a distinction is drawn between the duty to protect the environment and the responsibility not to cause damage by pollution to other states and their environment. Under Article 194(1), the duty to protect the environment requires states to take all the measures consistent with UNCLOS that are necessary to prevent, reduce and control pollution of the marine environment from any source, using the best practicable means at their disposal and in accordance with their capabilities. This introduces the element of differentiated responsibility based upon economic and other resources available, which subsequently emerged as a major theme at UNCED. Article 1(4) of UNCLOS defines pollution of the marine environment, on the basis of an earlier GESAMP definition, as:

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for uses of sea water and reduction of amenities.⁶⁵

This definition has since been relied upon in other agreements. It includes both acts that result in, and those that are 'likely to' result in, harmful effects. UNCLOS thus distinguishes between 'pollution' and 'damage'. Under Article 194(2), states are required not to cause damage by pollution, being directed to:

take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other states and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with the Convention.

Article 194(3) further elaborates the obligation to prevent pollution damage by addressing particular sources of pollution: from land-based activities; from seabed activities; from activities in the 'Area'; from dumping; from vessels; and from or through the atmosphere.⁶⁶ Article 194(4) limits the exercise of states' rights and obligations to prevent marine pollution, so that they cannot unjustifiably interfere with the rights of other states, and Article 194(5) requires special protection for rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. Recent case law has interpreted Article 194 to recognise that it applies to activities not directly related to the prevention of pollution, including the establishment of a marine protected area (*Chagos Marine Protected Area Arbitration*)⁶⁷ and the protection of fragile ecosystems as a result of fishing activities (*South China Sea*

⁶⁴ Art. 193.

⁶⁵ Art. 1(4); see generally M. Tomczak, 'The Definition of Marine Pollution: A Comparison of Definitions Used by International Conventions', 8 *Marine Policy* 311 (1984).

⁶⁶ Arts. 194(3) and 207-212. ⁶⁷ See p. 560.

Arbitration).⁶⁸ In addition, states parties must not transfer damage or hazards, or transform one type of pollution into another, and must limit the use of technologies or the introduction of alien or new species which may cause significant and harmful changes to the marine environment.⁶⁹

These general obligations serve as the basis for more detailed standards. They are supplemented by procedural obligations to give effect to the requirements of global and regional cooperation set forth in Article 197 and, in respect of semi-enclosed seas (Article 123). Techniques for implementing the substantive rules and standards include: notifying imminent or actual damage; developing pollution contingency plans and scientific research;⁷⁰ providing technical assistance, particularly to developing countries;⁷¹ and the monitoring and carrying out of environmental assessments of certain activities.⁷² UNCLOS also establishes new rules on enforcement,⁷³ ice-covered areas,⁷⁴ responsibility and liability,⁷⁵ and sovereign immunity,⁷⁶ and provides for the relationship between UNCLOS and other conventions for the protection and preservation of the marine environment.⁷⁷

The contribution of UNCLOS to the progressive development of international environmental law at the general level cannot be overstated. The freedom of states to pollute the marine environment is no longer unconstrained and the obligation to develop specific rules to give effect to the general obligations of UNCLOS is reinforced. By bringing together elements which had previously been scattered among different agreements, these general provisions of UNCLOS establish a framework for the further development of rules on substantive matters at the global and regional levels.

Regional Arrangements

In its articulation of a comprehensive legal order for the oceans, UNCLOS established the need for states to cooperate also on a regional basis for the protection and preservation of the marine environment.⁷⁸ In so doing, it acknowledged that ocean governance requires complex structures, which may be usefully developed at a regional level. Regional initiatives for marine protection were already in existence before the adoption of UNCLOS in 1982, with UNEP's Regional Seas Programme, and continued in the 1990s, with the adoption of conventions outside the framework of the UN, such as the regimes for the Northeast Atlantic and the Baltic Sea. Regional agreements have gradually incorporated the environmental principles that emerged at the UNCED and at WSSD, shifting away from the emphasis in UNCLOS on pollution prevention and favouring an integrated approach to marine protection.⁷⁹

⁶⁸ See pp. 531–2. ⁶⁹ Arts. 195–196. ⁷⁰ Arts. 198–200. ⁷¹ Arts. 202 and 203.

⁷² Arts. 204–206. On 'environmental impact assessment', see generally Chapter 14.

⁷³ Arts. 213–233; and Chapter 5, pp. 150–1. ⁷⁴ Art. 234; see Chapter 13, p. 644. ⁷⁵ Art. 235. ⁷⁶ Art. 236.

⁷⁷ Art. 237.

⁷⁸ Art. 197 requires states to cooperate regionally in 'formulating and elaborating international rules, standards and recommended practices and procedures consistent with the Convention'.

⁷⁹ A. Boyle, 'Regional Pollution Agreements and the Law of the Sea Convention', in W. E. Butler (ed.), *The Law of the Sea and International Shipping* (Dobbs Ferry, NY: Oceana, 1985), 315; E. Franckx, 'Regional Marine Environment Protection Regimes in the Context of UNCLOS', 13 *International Journal of Marine and Coastal Law* 307 (1998); T. Treves, 'Regional Approaches to the Protection of the Marine Environment', in J. Norton Moore and M. Nordquist (eds.), *The Stockholm Declaration and Law of the Marine Environment* (The Hague/London: Martinus Nijhoff, 2003); A. Boyle, 'Further Development of the 1982 Convention on the Law of the Sea: Mechanisms for Change', in D. Freestone, R. Barnes and D. Ong (eds.), *The Law of the Sea, Progress and Prospects* (Oxford: Oxford University Press, 2006), 52.

The following sections provide an overview of the principal regional arrangements, which include those concluded within the framework of UNEP's Regional Seas Programme and the framework conventions for the North-East Atlantic, the Baltic Sea and the Caspian Sea. Regional agreements that address specific sources of pollution are also discussed below, together with other international treaties on the matter. Special rules for the Antarctic and the Arctic are discussed in Chapter 13.⁸⁰

UNEP Regional Seas Programme

UNCLOS was preceded by the emergence of the UNEP Regional Seas Programme, an ambitious attempt at developing treaties and soft rules and standards at the regional level, taking account of the different needs and capabilities of the various regions. The Regional Seas Programme followed the 1972 Stockholm Conference and the creation of UNEP. In 1974, the FAO General Fisheries Council for the Mediterranean had sponsored guidelines for a framework convention on the protection of the marine environment against pollution in the Mediterranean.⁸¹ This led to the adoption in February 1975, under the auspices of UNEP, of the Mediterranean Action Plan,⁸² which has since become a model for other regions. The Plan comprised five basic components: environmental assessment, environmental management, institutional arrangements, financial arrangements, and regional legal instruments. It was followed by the 1976 Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution (1976 Barcelona Convention) and two Protocols.⁸³ In November 1976, UNEP convened its first 'Task Force on Legal Instruments for Regional Seas';⁸⁴ and in 1978 the UNEP Governing Council endorsed a Regional Seas Programme.⁸⁵

The UNEP Regional Seas Programme extends to fourteen regional areas.⁸⁶ Each of these has its own Action Plan,⁸⁷ and ten regions are the subject of binding international agreements. The only regions without a framework convention are the Northwest Pacific, the South Asian Seas and the East Asian Seas. Six of the programmes are directly administered by UNEP,⁸⁸ and the other seven by independent bodies.⁸⁹ In total, the UNEP Regional Seas Programme comprises more than forty framework Conventions and Protocols, with others under negotiation. The framework

⁸⁰ See e.g. Y. Tanaka, 'Four Models on Interaction between Global and Regional Frameworks on Environmental Protection against Marine Pollution: The Case of the Marine Arctic', 30 *Ocean Yearbook Online* (2016).

⁸¹ *Protection of the Marine Environment Against Pollution in the Mediterranean*, FAO Fisheries Report No. 148 (1974), Annex I.

⁸² UNEP/WG.2/5INF.3, reprinted in 14 *ILM* 481 (1975).

⁸³ Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (1976 Barcelona Dumping Protocol); and Protocol for Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency (1976 Barcelona Emergency Protocol).

⁸⁴ See P. H. Sand, 'Drafting of Regional Legal Instruments for Marine Environment Protection: The Case of the Mediterranean', UNEP/Doc. TFLIRS/Inf.4 Nairobi (1976).

⁸⁵ UNEP Governing Council Decision 6/2 (1978) and Programme Doc. UNEP/GC.6/7 (1978), 139–66.

⁸⁶ The term 'region' has no precise meaning and as used in the Regional Seas Programme has been applied to different types of region including those comprising stretches of coastal waters, archipelagos and semi-enclosed seas.

⁸⁷ Mediterranean (1975, revised in 1995); ROPME Sea Area (1978); Wider Caribbean (1981); East Asian (1981); South-East Pacific (1981); Red Sea and Gulf of Aden (1982, revised in 1995); South Pacific (1982, revised in 2000); Western Africa (1981); Eastern Africa (1982); North-West Pacific (1994); South Asian Seas (1995); Black Sea (1996, revised in 2009); and North-East Pacific (2002).

⁸⁸ Caribbean Region; Caspian Sea; East Asian Seas; Eastern Africa Region; Mediterranean Region; North-West Pacific Region; and Western Africa Region.

⁸⁹ Black Sea Region; North-East Pacific Region; Red Sea and Gulf of Aden; ROPME Sea Area; South Asian Seas; South-East Pacific Region; and Pacific Region.

Conventions and initial protocols had a strong focus on the prevention of marine pollution, but subsequent protocols developed rules on specially protected areas and wildlife. The respective framework conventions and protocols of the Regional Seas Programme are set out in Table 11.1.

The ten regional seas framework conventions have a similar content and structure. They include basic substantive and procedural obligations, institutional arrangements, and mechanisms for the adoption of protocols and annexes. Each convention defines its geographic scope of application, and provides for its relationship with other international conventions and rules of international law. Except for the 1983 Cartagena Convention, which includes no definition, each convention defines 'pollution' similarly to Article 2(a) of the 1976 Barcelona Convention, according to which pollution is:

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results, or is likely to result, in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of seawater and reduction of amenities.⁹⁰

Each framework convention includes general obligations to take, individually or jointly, appropriate measures to prevent, abate and combat pollution to protect and enhance the marine environment, and to formulate and adopt protocols on agreed measures, procedures and standards. These commitments are general in nature, and it is doubtful whether they could create enforceable obligations in specific situations except in the most flagrant cases. The framework conventions establish obligations to combat pollution from different sources, including dumping from ships and aircraft, from exploration and exploitation of the territorial sea and/or continental shelf and/or seabed, and from land-based sources, as well as to cooperate in dealing with pollution emergencies.⁹¹ A number of the conventions also establish measures against pollution from transboundary movements of hazardous wastes and their disposal, and from atmospheric sources. Other provisions to be found in some of the framework conventions include: action to prevent coastal erosion,⁹² and prevention of environmental damage from engineering activities.⁹³ The 1986 Noumea Convention includes detailed obligations on the disposal of wastes, environmental assessment, storage of toxic and hazardous wastes, and contamination from nuclear tests.⁹⁴ Although all framework conventions emphasise the prevention of marine pollution, most of them also contain at least one provision establishing the need for the conservation of marine habitats and species. Some require the establishment of specially protected areas;⁹⁵ or

⁹⁰ 1976 Barcelona Convention, Art. 2(a) (as revised in 1995); 1978 Kuwait Convention, Art. I(a); 1981 Abidjan Convention, Art. 2(1) (adding 'coastal zones, and related inland waters' to the 'marine environment'); 1981 Lima Convention, Art. 2(a); 1982 Jeddah Convention, Art. 1(3); 1985 Nairobi Convention, Art. 2(b); 1986 Noumea Convention, Art. 2(f).

⁹¹ 1976 Barcelona Convention (as revised in 1995), Arts. 4–11; 1978 Kuwait Convention, Arts. III–IX; 1981 Abidjan Convention, Arts. 4–9 and 12; 1981 Lima Convention, Arts. 3–6; 1982 Jeddah Convention, Arts. III–IX; 1983 Cartagena Convention, Arts. 3–11; 1985 Nairobi Convention, Arts. 3–12; 1986 Noumea Convention, Arts. 4–9 and 15.

⁹² 1981 Abidjan Convention, Art. 10; 1981 Lima Convention, Art. 5; 1986 Noumea Convention, Art. 13.

⁹³ 1985 Nairobi Convention, Art. 12. ⁹⁴ Arts. 10–12.

⁹⁵ 1981 Abidjan Convention, Art. 11; 1985 Nairobi Convention, Art. 10; 1986 Noumea Convention, Art. 14; 2002 Antigua Convention, Art. 10.5 and 10.2(h).

TABLE 11.1 Regional Seas Programme conventions and protocols

Region	Relevant treaty instruments
Mediterranean	<p>1976 Convention for the Protection of the Mediterranean Sea Against Pollution (1976 Barcelona Convention)¹</p> <p>1976 Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (Barcelona Dumping Protocol)²</p> <p>1980 Athens Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources (1980 Athens LBS Protocol)³</p> <p>1982 Geneva Protocol Concerning Mediterranean Specially Protected Areas (1982 Geneva SPA Protocol)⁴</p> <p>1994 Protocol for the Protection of the Mediterranean Sea Against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and Its Subsoil (1994 Madrid Offshore Protocol)⁵</p> <p>1996 Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal (1996 Izmir Hazardous Wastes Protocol)⁶</p> <p>2002 Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (2002 Prevention and Emergency Protocol)⁷</p> <p>2008 Protocol on Integrated Coastal Zone Management in the Mediterranean (2008 Integrated Coastal Zone Management Protocol)⁸</p>
Western Africa	<p>1981 Abidjan Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (1981 Abidjan Convention)⁹</p> <p>1981 Abidjan Protocol Concerning Co-operation in Combating Pollution in Cases of Emergency (1981 Abidjan Emergency Protocol)¹⁰</p> <p>2012 Additional Protocol to the Abidjan Convention Concerning Cooperation in the Protection and Development of Marine and Coastal Environment from Land-Based Sources and Activities in the Western, Central and Southern African Region (2012 Additional Protocol on Land-Based Sources)¹¹</p>
Caribbean	<p>1983 Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (1983 Cartagena Convention)¹²</p> <p>1983 Cartagena Protocol Concerning Co-operation in Combating Oil Spills (1983 Cartagena Oil Spills Protocol)¹³</p> <p>1990 Kingston Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region (1990 Kingston SPA Protocol)¹⁴</p> <p>1999 Protocol on the Prevention, Reduction and Control of Land-Based Sources and Activities (1999 LBS Protocol)¹⁵</p>
Eastern Africa	<p>1985 Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (1985 Nairobi Convention)¹⁶</p> <p>1985 Nairobi Protocol Concerning Protected Areas and Wild Fauna and Flora (1985 Nairobi Fauna and Flora Protocol)¹⁷</p> <p>1985 Nairobi Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency (1985 Nairobi Emergency Protocol)¹⁸</p> <p>2010 Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities (Nairobi LBS Protocol)¹⁹</p>
Caspian Sea	<p>2003 Framework Convention for the Protection of the Marine Environment of the Caspian Sea (2003 Tehran Convention)²⁰</p> <p>2011 Protocol Concerning Regional Preparedness, Response and Co-operation in Combating Oil Pollution Incidents (2011 Aktau Protocol)²¹</p> <p>2012 Protocol for the Protection of the Caspian Sea against Pollution from Land-based Sources and Activities (2012 Moscow Protocol)²²</p> <p>2014 Protocol for the Conservation of Biological Diversity (2014 Ashgabat Protocol)²³</p>

TABLE 11.1 (cont.)

Region	Relevant treaty instruments
ROPME (Arabian Gulf)	1978 Kuwait Regional Convention for Co-operation on Protection of the Marine Environment from Pollution (1978 Kuwait Convention) ²⁴
	1978 Kuwait Protocol Concerning Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (1978 Kuwait Emergency Protocol) ²⁵
	1989 Kuwait Protocol Concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf (1989 Kuwait Exploration Protocol) ²⁶
	1990 Kuwait Protocol Concerning Pollution from Land-Based Sources (1990 Kuwait LBS Protocol) ²⁷
	1998 Protocol on the Control of Marine Transboundary Movements and Disposal of Hazardous Wastes (1998 Hazardous Wastes Protocol) ²⁸
South-East Pacific	1981 Lima Convention for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific (1981 Lima Convention) ²⁹
	1981 Lima Agreement on Regional Co-operation in Combating Pollution of the South-East Pacific by Hydrocarbons or Other Harmful Substances in Cases of Emergency (1981 Lima Emergency Agreement) ³⁰ (as supplemented by the 1983 Quito Supplementary Protocol to the 1981 Lima Agreement (1983 Quito Protocol)) ³¹
	1983 Quito Protocol for the Protection of the South-East Pacific Against Pollution from Land-Based Sources (1983 Quito LBS Protocol) ³²
	1989 Paipa Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific (1989 Paipa SPA Protocol) ³³
	1989 Paipa Protocol for the Protection of the South-East Pacific Against Radioactive Contamination (1989 Paipa Radioactive Contamination Protocol) ³⁴
	1992 Protocol on the Programme for the Regional Study on the El Niño Phenomenon (ERFEN) in the South-East Pacific (1992 El Niño Protocol) ³⁵
Red Sea and Gulf of Aden	1982 Jeddah Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (1982 Jeddah Convention) ³⁶
	1982 Jeddah Protocol Concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (1982 Jeddah Emergency Protocol) ³⁷
	2005 Protocol Concerning the Protection of the Marine Environment from Land-Based Activities in the Red Sea and Gulf of Aden (2005 Land-Based Activities Protocol) ³⁸
	2005 Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden (2005 Protected Areas Protocol) ³⁹
Pacific	1986 Noumea Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (1986 Noumea Convention) ⁴⁰
	1986 Noumea Protocol Concerning Co-operation in Combating Pollution Emergencies (1986 Noumea Pollution Emergencies Protocol) ⁴¹
	1986 Noumea Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (1986 Noumea Dumping Protocol) ⁴²
Black Sea	1992 Convention on the Protection of the Black Sea Against Pollution and its three Protocols on land-based sources of marine pollution, emergency situations for oil pollution and other harmful substances, and dumping ⁴³
	2002 Black Sea Biodiversity and Landscape Conservation Protocol ⁴⁴
	2009 Protocol on the Protection of the Marine Environment of the Black Sea from Land-Based Sources and Activities (2009 Land-Based Sources Protocol) ⁴⁵
North-East Pacific	2002 Convention on the Protection and Sustainable Development of the Marine and Coastal Environment of the North-East Pacific ⁴⁶

1 Barcelona, 16 February 1976, in force 12 February 1978, 15 ILM 290 (1976). Replaced by the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, in force 9 July 2004, UN Doc. UNEP (OCA)/MED IG.6/7; twenty-one states and the EU are party. See A. Vallega, 'Geographical Coverage and Effectiveness of the

UNEP Convention on the Mediterranean', 31 *Ocean and Coastal Management* 199 (1996); S. Chung, 'Is the Convention-Protocol Approach Appropriate for Addressing Regional Marine Pollution?: The Barcelona Convention System Revisited', 13 *Penn State Environmental Law Review* 85 (2004); P. Deupmann, *The Barcelona System: An Overview* (2007); M. Gavouneli, 'Mediterranean Challenges: Between Old Problems and New Solutions', 23 *International Journal of Marine and Coastal Law* 477 (2008).

2 Barcelona, 16 February 1976, in force 12 February 1978, 15 ILM 300 (1976); twenty-one states and the EU are party. Revised in Barcelona, 9–10 June 1995, as the Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea, not yet in force.

3 Athens, 17 May 1980, in force 17 June 1983, 19 ILM 869 (1980); twenty-one states and the EU are party. Amended in Syracuse, Italy, 6–7 March 1996, as the Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources and Activities, 7 *Yearbook of International Environmental Law* 678 (1996), in force 11 May 2008; seventeen states are party.

4 Geneva, 3 April 1982, in force 23 March 1986, IELMT 982:26; twenty-one states and the EU are party. Revised in Barcelona, 9–10 June 1995, as the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA and Biodiversity Protocol), in force 12 December 1999, OJ L322, 14 December 1999, 3; seventeen states are party. See T. Scovazzi (ed.), *Marine Specially Protected Areas: The General Aspects of the Mediterranean Regional System* (The Hague: Kluwer, 1999).

5 Madrid, 14 October 1994, in force 24 March 2011, available at www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE000543.txt; seven states are party.

6 Izmir, 1 October 1996, in force 18 January 2008, UN Doc. UNEP (OCA)/MED/IG.9/4 Annexes (1996); seven states are party.

7 Adopted in Valetta on 25 January 2002, in force 17 March 2004; fifteen states are party. It amends the 1976 Emergency Protocol, adopted in Barcelona, 16 February 1976, in force 12 February 1978, 15 ILM 306 (1976).

8 Madrid, 21 January 2008, in force 24 March 2011; ten states are party.

9 Abidjan, 23 March 1981, in force 5 August 1984, 20 ILM 746 (1981); seventeen states are party. See D. Alh riti re, 'Convention Sur le Milieu Marin de l'Afrique de l'Ouest et du Centre', 7 *Environmental Policy and Law* 61 (1981); A. N. Assomboni and M. Prieur, *Marine and Coastal Environmental Law in West Africa: Five French Countries Case* (2006). See also abidjanconvention.org

10 Abidjan, 23 March 1981, in force 5 August 1984, 20 ILM 756 (1981); thirteen states are party.

11 Grand-Bassam, Ivory Coast, 22 June 2012, Additional Protocol to the Abidjan Convention Concerning Cooperation in the Protection and Development of Marine and Coastal Environment from Land-Based Sources and Activities in the Western, Central and Southern African Region; not yet in force.

12 Cartagena, 24 March 1983, in force 11 October 1986, 22 ILM 221 (1983); twenty-five states are party. G. Bundschuh, 'Transfrontier Pollution: Convention for the Protection and Development of the Marine Environment of the Wider Caribbean: Agreement Involving Collective Response to Marine Pollution Incidents and Long Range Environmental Planning', 14 *Georgetown Journal of International and Comparative Law* 201 (1984); W. Anderson, *The Law of Caribbean Marine Pollution* (The Hague: Kluwer, 1997); B. C. Sheehy, 'Does International Marine Environment Law Work? An Examination of the Cartagena Convention for the Wider Caribbean Region', 12 *Georgetown International Environmental Review* 441 (2004); B. Lausche, 'Wider Caribbean Region – A Pivotal Time to Strengthen Regional Instruments for Biodiversity Conservation', 23 *International Journal of Marine and Coastal Law* 499 (2008); J. Foster, I. R. Lake, A. R. Watkinson and J. A. Gill, 'Marine Biodiversity in the Caribbean UK Overseas Territories: Perceived Threats and Constraints to Environmental Management', 35 *Marine Policy* 647 (2011); Lucia Fanning, Robin Mahon and Patrick McConney, 'Applying the Large Marine Ecosystem (LME) Governance Framework in the Wider Caribbean Region', 42 *Marine Policy* 99 (2013). See also cep.unep.org

13 Cartagena, 24 March 1983, in force 11 October 1986, 22 ILM 240 (1983); twenty-five states are party.

14 Kingston, 18 January 1990, in force 18 June 2000, 1 *Yearbook of International Environmental Law* 441 (1990); sixteen states are party.

15 Oranjestad, Aruba, 6 October 1999, in force 13 August 2010; eight states are party.

16 Nairobi, 21 June 1985, in force 30 May 1996, IELMT 985:46; ten states are party. Amended in Nairobi, Kenya, 31 March 2010, as the Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, UN Doc. UNEP(DEPI)/EAF/CPP.6/10/Suppl., not in force. See C. Okidi, 'Nairobi Convention: Conservation and Development Imperatives', 15 *Environmental Policy and Law* 43 (1985); D. M. Dzidzornu,

- 'Marine Environmental Protection under the Nairobi and Abidjan Regimes: Working toward Functional Revitalization', 26 *Ocean Yearbook* 381 (2012). See also web.unep.org/nairobiconvention
- 17 Nairobi, 21 June 1985, in force 30 May 1996, IELMT 985:47. A. Chircop et al., 'Governance of Marine Protected Areas in East Africa: A Comparative Study of Mozambique, South Africa, and Tanzania', 41 *Ocean Development and International Law* 1 (2010); C. Grilo et al., 'Prospects for Transboundary Marine Protected Areas in East Africa', 43 *Ocean Development and International Law* 243 (2012).
- 18 Nairobi, 21 June 1985, in force 30 May 1996, IELMT 985:48.
- 19 Nairobi, 31 March 2010, UN Doc. UNEP(DEPI)/EAF/CPP.6/11/Suppl., not in force.
- 20 Tehran, 4 November 2003, in force 12 August 2006, five states are party. C. Romano, 'The Caspian and International Law: Like Oil and Water?', in W. Ascher and N. Mirovitskaya (eds.), *The Caspian Sea: A Quest for Environmental Security* (The Hague: Kluwer, 2000), 145; B. Janusz, 'The Framework Convention for the Protection of the Marine Environment of the Caspian Sea', 4 *Chinese Journal of International Law* 257 (2005); J. Nouri, A. R. Karbassi and S. Mirkia, 'Environmental Management of Coastal Regions in the Caspian Sea', 5 *International Journal of Environmental Science and Technology* 43 (2008); E. Karataeva, 'Can the Caspian Sea Survive Its Own Oil – Environmental Regulation of the Offshore Oil and Gas Industry in the Caspian Sea', 29 *International Journal of Marine and Coastal Law* 415 (2014); A. Naghizadeh et al., 'Environmental Protection of Caspian Sea by Establishing of Joint Development Zone and Its Effects on Regional and International Security', 9 *Journal of Politics and Law* 155 (2016). See also www.tehranconvention.org
- 21 Aktau, 12 August 2011, in force 25 July 2016, five states are party.
- 22 Moscow, 12 December 2012, not in force.
- 23 Ashgabat, 30 May 2014, not in force.
- 24 Kuwait, 24 April 1978, in force 1 July 1979, 1140 UNTS 133; eight states are party. See S. S. Saqat, 'The Kuwait Convention for Co-operation on the Protection from Pollution of the Marine Environment of the Arabian Gulf Area', 34 *REDI* 149 (1978); S. Amin, 'The Gulf States and the Control of Marine Pollution: Regional Arrangements and National Legislation', *Lloyd's Maritime and Commercial Law Quarterly* 104 (February 1982); A. H. Abu-Zinada, H. Barth, F. Krupp, B. Böer and T. Z. Al Abdessalaam (eds.), *Protecting the Gulf's Marine Ecosystems from Pollution* (Switzerland: Birkhäuser, 2008); R. Meyer-Reumann, 'The Legal Environment of the Environment in the Gulf', 16 *Arab Law Quarterly* 358 (2001); A. Naser, 'Assessment and Management of Heavy Metal Pollution in the Marine Environment of the Arabian Gulf: A Review', 72 *Marine Pollution Bulletin* 6 (2013). See also ropme.org/home.clx
- 25 Kuwait, 24 April 1978, in force 1 July 1979, 17 ILM 526 (1978); eight states are party.
- 26 Kuwait, 29 March 1989, in force 17 February 1990; eight states are party.
- 27 Kuwait, 20 February 1990, in force 1 February 1993; six states are party.
- 28 Tehran, 17 March 1998, in force 21 August 2005; six states are party.
- 29 Lima, 12 November 1981, in force 19 May 1986, IELMT 981:85; five states are party. See Ferrero Costa, 'Pacific Resources and Ocean Law: A Latin American Perspective', 16 *Ecology Law Quarterly* 245 (1989); J. Vince et al., 'Ocean governance in the South Pacific Region: Progress and Plans for Action', 79 *Marine Policy* 40 (2017). See also www.cpps-int.org
- 30 Lima, 12 November 1981, in force 13 July 1986, IELMT 981:85; five states are party.
- 31 Quito, 22 July 1983, in force 20 May 1987, IELMT 983:55; five states are party.
- 32 Quito, 22 July 1983, in force 23 September 1986, IELMT 983:54; five states are party.
- 33 Paipa, 21 September 1989, in force 24 January 1995, IELMT 989:71; five states are party.
- 34 Paipa, 21 September 1989, in force 24 January 1995, IELMT 989:70; five states are party.
- 35 Callao, 6 November 1992, in force 15 October 1997; four states are party.
- 36 Jeddah, 14 February 1982, in force 20 August 1985, 9 *Environmental Policy and Law* 56 (1982); seven states and the Palestinian Authority are party. See M. A. Mekouar, 'La Convention de Jeddah du 14 Février 1982 pour la Protection de l'Environnement de la Mer Rouge et du Golfe d'Aden', 8 *R.J.E.* 81 (1983); W. Gladstone, 'Towards Conservation of Globally Significant Ecosystem: The Red Sea and Gulf of Aden', 18 *Aquatic Conservation: Marine and Freshwater Ecosystems* 1 (2008). See also www.persga.org
- 37 Jeddah, 14 February 1982, in force 20 August 1985, IELMT 982:14; seven states and the Palestinian Authority are party.
- 38 Jeddah, 25 September 2005, not yet in force
- 39 Jeddah, 12 December 2005, not yet in force. See H. Van Lavieren and R. Klaus, 'An Effective Regional Marine Protected Area Network for the ROPME Sea Area: Unrealistic Vision or Realistic Possibility?', 72 *Marine Pollution Bulletin* 389 (2013).
- 40 Noumea, 25 November 1986, in force 18 August 1990, 26 ILM 38 (1987); twelve states are party. See B. Cicin-Sain and R. Knecht, 'The Emergence of a Regional Ocean Regime in the South Pacific', 16 *Ecology Law Quarterly* 171 (1989);

S. Riesenfeld, 'Pacific Ocean Resources: The New Regionalism and the Global System', 16 *Ecology Law Quarterly* 355 (1989); L. Osmundsen, 'Paradise Preserved? The Contribution of the SPREP Convention to the Environmental Welfare of the South Pacific', 19 *Ecology Law Quarterly* 727 (1992); M. Simon, 'The South Pacific Regional Environmental Programme's (SPREP) Aptitude in Managing Marine Pollution in the South Pacific', 18 *Australian and New Zealand Maritime Law Journal* 107 (2004); P. Hassan, 'Good Environmental Governance: Some Trends in the South Asian Region', 18 *Asia Pacific Journal of Environmental Law* 169 (2016). See also www.sprep.org. This Convention was relied upon by New Zealand in its 1995 application to the ICJ on the legality of French nuclear testing (see Chapter 5, p. 155).

41 Noumea, 25 November 1986, in force 18 August 1990, IELMT 986:878; twelve states are party.

42 Noumea, 25 November 1986, in force, 18 August 1990, IELMT 986:87A; eleven states are party.

43 Bucharest, 22 April 1992, in force 15 January 1994, 32 ILM 1101 (1993); six states are party. See E. Doussis, 'Environmental Protection of the Black Sea: A Legal Perspective', 6 *Southeast European and Black Sea Studies* 355 (2006); A-M. Tiganescu, 'Aspects Referring to the International Cooperation on the Protection of the Black Sea against Pollution', 4 *Contemporary Readings in Law and Social Justice* 1062 (2012); N. Oral, *Regional Co-operation and Protection of the Marine Environment under the International Law: The Black Sea* (Leiden: Martinus Nijhoff, 2013). See also blacksea-commission.org

44 Sofia, 14 June 2002, in force 20 June 2011; four states are party.

45 Sofia, 7 April 2009, not in force.

46 Antigua, 18 February 2002, not in force, available at www2.ecolex.org/server2neu.php/libcat/docs/TRE/Full/En/TRE-001350.txt

in more recent agreements the conservation of biological diversity,⁹⁶ or the protection of marine living resources.⁹⁷ A number of regimes have established specific protocols on habitat and biodiversity conservation. The two most recent treaties, the revised 1995 Barcelona Convention and the 2002 Antigua Convention, incorporate important principles such as the precautionary principle, the polluter pays principle, and the notion of integrated coastal management. The Antigua Convention also adopts the ecosystem approach in fisheries management measures.⁹⁸

Apart from the general commitments, the framework conventions establish procedural obligations to implement substantive obligations. Legal techniques which find support in the framework conventions include: monitoring; scientific and technological cooperation; technical assistance; exchange of information; public access to information and participation; and reporting requirements.⁹⁹ Starting in the late 1970s, the majority of the conventions began to require parties to carry out environmental impact assessments.¹⁰⁰ Although the obligations are general, they provide a starting point for cooperation and the elaboration of more detailed commitments in subsequent protocols or other treaties.

Each framework convention also creates basic institutional structures for the administration of the Convention and a Plan for each region. The importance of these arrangements should not be understated since they establish, often for the first time, regional institutions for environmental protection. The institutions usually comprise regular Meetings of the Parties and a secretariat. The meetings are charged with reviewing implementation and may generally adopt, review and

⁹⁶ 1976 Barcelona Convention (as revised in 1995), Art. 10. ⁹⁷ 1992 Bucharest Convention, Art. XIII.

⁹⁸ 1976 Barcelona Convention (as revised in 1995), Art. 4; 2002 Antigua Convention, Arts. 5 and 10.

⁹⁹ 1976 Barcelona Convention (as revised in 1995), Arts. 12, 13 and 15; 1978 Kuwait Convention, Arts. X–XII and XXIII; 1981 Abidjan Convention, Arts. 13, 14 and 22; 1981 Lima Convention, Arts. 7–10 and 14; 1982 Jeddah Convention, Arts. X–XII and XXII; 1983 Cartagena Convention, Arts. 12, 13 and 22; 1985 Nairobi Convention, Arts. 13, 14 and 23; 1986 Noumea Convention, Arts. 16–19.

¹⁰⁰ 1976 Barcelona Convention (revised in 1995), Art. 4.3; 1978 Kuwait Convention, Art. XI; 1981 Abidjan Convention, Art. 13; 1981 Lima Convention, Art. 8; 1983 Cartagena Convention, Art. 12; 1985 Nairobi Convention, Art. 13; 1986 Noumea Convention, Art. 16; 2002 Antigua Convention, Arts. 6(c), 10.2(b) and 10.3.

amend annexes to the convention and protocols, make recommendations, and undertake any additional action that may be required for the achievement of the purposes of the convention and protocols.¹⁰¹ Secretariat functions are carried out by UNEP¹⁰² or by regional intergovernmental organisations.¹⁰³

North-East Atlantic: 1992 OSPAR Convention¹⁰⁴

The principal instruments regulating the North Sea and the North-East Atlantic are the Convention for the Protection of the Marine Environment of the North-East Atlantic (1992 OSPAR Convention)¹⁰⁵ (replacing the 1972 Oslo Dumping Convention¹⁰⁶ and the 1974 Paris Convention)¹⁰⁷ and the 1983 Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (Bonn Agreement).¹⁰⁸ The 1992 OSPAR Convention adopted a more comprehensive and integrated approach to the protection of the North Sea and the North-East Atlantic than its predecessor conventions.

The 1992 OSPAR Convention represented a new approach to the protection of the marine environment by seeking to regulate all sources of marine pollution in a single instrument. From its entry into force in March 1998, it replaced the two earlier conventions, providing a comprehensive and simplified approach. Its provisions reflect many of the principles that emerged during the UNCED process, and it transformed many of the Oslo and Paris Commissions' recommendations into treaty obligations. The five OSPAR Convention Annexes adopt commitments on pollution from land-based sources, by dumping and incineration, and from offshore sources, and on the assessment of the quality of the marine environment and on the protection and conservation of the ecosystems and biological diversity of the 'maritime area'.¹⁰⁹ The Convention applies to the maritime area of the North-East Atlantic and Arctic Oceans, including the North Sea, comprising internal waters and territorial seas, as well as applying to the high seas and the seabed and subsoil.¹¹⁰

¹⁰¹ 1976 Barcelona Convention (revised in 1995), Art. 17; 1981 Abidjan Convention, Arts. 16 and 17; 1981 Lima Convention, Arts. 12 and 13; 1983 Cartagena Convention, Arts. 15 and 16; 1985 Nairobi Convention, Arts. 16 and 17; 1986 Noumea Convention, Arts. 21 and 22.

¹⁰² 1976 Barcelona Convention (revised in 1995), Art. 17; 1981 Abidjan Convention, Art. 16(1); 1983 Cartagena Convention, Art. 15; 1985 Nairobi Convention, Art. 16; 2003 Tehran Convention.

¹⁰³ 1978 Kuwait Convention, Art. XVI (Regional Organization for the Protection of the Marine Environment); 1981 Lima Convention, Art. 13 (Permanent Commission of the South Pacific); 1982 Jeddah Convention, Art. XVI (Regional Organization for the Conservation of the Red Sea and the Gulf of Aden Environment); 1986 Noumea Convention, Arts. 2(g) and 21 (Secretariat of the Pacific Regional Environment Programme).

¹⁰⁴ E. Hey, T. Ijlstra and A. Nollkaemper, 'The 1992 Paris Convention for the Protection of the Marine Environment of the North-East Atlantic: A Critical Analysis', 8 *International Journal of Marine and Coastal Law* 1 (1993); M. Pallemarts, 'The North Sea and Baltic Sea Land-Based Sources Regimes: Reducing Toxics or Rehashing Rhetoric?', 13 *International Journal of Marine and Coastal Law* 421 (1998); E. Hey, 'The Interplay between Multilateral Environmental and Fisheries Law: A Struggle to Sustainably Regulate Economic Activity - Including a Case Study of the North Sea', 54 *Japanese Yearbook of International Law* 190 (2011). See also www.ospar.org

¹⁰⁵ Paris, 22 September 1992, in force 25 March 1998, 32 ILM 1228 (1993). The Convention's contracting parties are Belgium, Denmark, the EU, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

¹⁰⁶ Oslo, 15 February 1972, in force 7 April 1974, 932 UNTS 3; amended by Protocol of 2 March 1983, in force 1 September 1989.

¹⁰⁷ Paris, 4 June 1974, in force 5 October 1976, 13 ILM 352 (1974).

¹⁰⁸ Bonn, 13 September 1983, in force 1 September 1989, available at www.bonnagreement.org ¹⁰⁹ Arts. 3-7.

¹¹⁰ It does not apply to the Baltic or Mediterranean Seas.

Significant legal developments adopted by the Convention include the following: a commitment to 'sustainable management' (rather than sustainable development); the incorporation of the precautionary principle and the polluter pays principle,¹¹¹ and the concepts of best available techniques and best available practice and clean technology;¹¹² and the creation of a Commission with powers to take legally binding decisions and participate in compliance.¹¹³ The Convention also incorporated, for the first time in an international treaty, a commitment to increased public participation through the right of access to information and participation of non-governmental organisations. In the *MOX Plant (OSPAR)* case, Ireland instituted arbitration proceedings against the United Kingdom on the basis of OSPAR's right of access to information.¹¹⁴

The Preamble to the Convention emphasises environmental protection as an end in itself, signalling a move away from anthropocentrism and a recognition of the importance of the marine environment and the flora and fauna it supports. In defining the 'sustainable management' of the maritime area, the Convention endorsed 'sustainability' as an emerging international legal concept.¹¹⁵ The Convention adopted a comprehensive 'ecosystem' approach to the control and prevention of pollution. Pollution is to be eliminated (rather than 'prevented, reduced and controlled'), and degraded areas must be restored 'so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected'.¹¹⁶

The parties committed themselves to adopt programmes and measures and to harmonise policies and strategies which contain time-limits and take full account of the latest technological developments and practices designed to 'prevent and eliminate pollution fully', although each may adopt more stringent measures.¹¹⁷ The Convention promotes scientific and technical research, assessment of the quality of the environment and the settlement of disputes. Parties undertook to publish regular joint assessments of the quality of the marine environment, including the effectiveness of measures taken and planned on the basis of monitoring, modelling, remote sensing and progressive risk assessment strategies.¹¹⁸

The OSPAR Commission, comprising a representative from each party, was established to: supervise the implementation of the Convention; review the condition of the maritime area and the effectiveness of measures adopted and priorities; and draw up programmes and measures, including economic instruments.¹¹⁹ Apart from receiving reports from the parties, the Commission may, at the request of a party, consider transboundary pollution that is likely to prejudice the interests of a party and make recommendations to reach a solution.¹²⁰ It must also assess compliance and call for steps to bring about full compliance, including measures to assist a party

¹¹¹ Art. 2(2)(a) and (b); Chapter 6, pp. 229–40.

¹¹² Art. 2(3)(b). On best available techniques and best environmental practice see Appendix 1. 'Clean technology' is not defined; but see the 1991 Bamako Convention, at Chapter 12, p. 473.

¹¹³ Art. 10. ¹¹⁴ Arts. 9 and 32; Chapter 15, p. 709.

¹¹⁵ 'Sustainable management' is defined in the Convention as 'the management of human activities in such a manner that the marine ecosystem will continue to sustain the legitimate uses of the sea and will continue to meet the needs of present and future generations' (Preamble).

¹¹⁶ Art. 2(1)(a). ¹¹⁷ Art. 2(1)(b), (3)(a) and (5).

¹¹⁸ Art. 6 and Annex IV, Art. 2. 'Monitoring' is defined as 'the repeated measurement of: (a) the quality of the marine environment and each of its compartments, that is, water, sediments and biota; (b) activities or natural and anthropogenic inputs which may affect the quality of the marine environment; (c) the effects of such activities and inputs' (Annex IV, Art. 1(1)).

¹¹⁹ Art. 10. ¹²⁰ Arts. 21(2) and 22.

to carry out its obligations.¹²¹ OSPAR has sought to progressively strengthen its monitoring programmes, notably its Coordinated Environmental Monitoring Program (CEMP).¹²² These powers imply extended functions for the permanent secretariat.¹²³

Building on previous strategic and action plans, the OSPAR Commission at its 2010 meeting adopted a Strategy for the Protection of the Marine Environment of the North-East Atlantic 2010–2020.¹²⁴ This Strategy takes into consideration the Quality Status Report, an evaluation of the quality status of the North-East Atlantic based on ten years of monitoring, which indicates that there are a number of earlier marine protection objectives which have not been achieved.¹²⁵ The new Strategy places the ecosystem approach at the core of OSPAR's objectives and fosters international cooperation with regional organisations, such as the EU, and other relevant international instruments and organisations competent in a wide range of fields, including biodiversity conservation, fisheries and marine transportation. The Strategy maintains its previous priority objectives: protection and conservation of ecosystems and biological diversity; hazardous substances; radioactive substances; and eutrophication; and adds the regulation of offshore oil and gas activities.

Baltic Sea: the 1992 Helsinki Convention¹²⁶

The geography and marine ecology of the Baltic Sea has contributed to its environmental degradation resulting from unchecked industrialisation. It is a relatively closed sea with only limited inflows of water past the Danish and Swedish coasts, further aggravated by the fact that much of it is covered by ice in the winter months. The 1974 Convention on the Protection of the Marine Environment of the Baltic Sea Area (1974 Baltic Convention)¹²⁷ failed to fulfil its aims, and did not prevent massive pollution of the Baltic Sea leading to more than 100,000 square kilometres being described as 'totally dead'.¹²⁸ The 1974 regime was superseded by the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area (1992 Helsinki Convention),¹²⁹ which enlarged the Convention area by including internal waters.

The 1992 Convention amended the six Annexes to the 1974 Convention and added a new Annex VII on the prevention of pollution from offshore activities.¹³⁰ Under the 1992 Convention, parties must, individually or jointly, take measures to 'prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea Area and the preservation of its

¹²¹ Art. 23. ¹²² OSPAR Agreement 2016–01. ¹²³ Art. 12.

¹²⁴ Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2010–2020, OSPAR Agreement 2010–3, Bergen: 20–24 September 2010.

¹²⁵ OSPAR Commission, Quality Status Report (2010), at <http://qsr2010.ospar.org/en/index.html>

¹²⁶ H. Backer and J. Leppänen, 'The Helsinki Convention: 35 Years and Three Eras in Bridging Boundaries to Restore the Marine Environment of the Baltic Sea', in M. Taniguchi and T. Shiraiwa (eds.), *The Dilemma of Boundaries* 199 (New York: Springer, 2012). See also www.helcom.fi

¹²⁷ Helsinki, 22 March 1974, in force 3 May 1980, 13 ILM 546 (1974). For amendments adopted by the Helsinki Commission in 1983, 1987, 1989 and 1990, see OJ C222, 18 August 1993, 15.

¹²⁸ *Financial Times*, 14 July 1993, 14: dangerous concentrations include nitrogen and phosphorus, sewage effluents, toxic substances (PCBs, DDT, chlorine, mercury, lead and cadmium) and chemical weapons dumped after the Second World War.

¹²⁹ Helsinki, 9 April 1992, in force 17 January 2000, LDC.2/Circ.303, 10 August 1992; ten states are party.

¹³⁰ The current list of Annexes under the 1992 Convention is: Annex I, Harmful Substances; Annex II, Criteria for the Use of Best Environmental Practice and Best Available Technology; Annex III, Criteria and Measures Concerning the Prevention of Pollution from Land-Based Sources; Annex IV, Prevention of Pollution from Ships; Annex V, Exemptions from the General Prohibition of Dumping of Waste and Other Matter in the Baltic Sea Area; Annex VI, Prevention of Pollution from Offshore Activities; Annex VII, Response to Pollution Incidents.

ecological balance'.¹³¹ They must apply the precautionary principle and the polluter pays principle, promote the use of best environmental practice and best available technology, and use best endeavours to ensure that implementation of the Convention does not cause trans-boundary pollution in areas beyond the Baltic Sea or lead to other 'unacceptable environmental strains'.¹³² The Convention applies to the water body and the seabed, including each party's territorial sea and internal waters, but not to ships and aircraft used only on governmental non-commercial service.¹³³

These general commitments and principles are supplemented by specific obligations. The parties are required to prevent and eliminate pollution by harmful substances from all sources under Annex I, which identifies banned substances and pesticides.¹³⁴ Pollution from land-based sources is to be prevented and eliminated in accordance with Annex III,¹³⁵ and pollution from ships is subject to the measures required by Annex IV.¹³⁶ Incineration is prohibited, as is dumping, subject to exemptions for dredged material and safety.¹³⁷ The exploration and exploitation of the seabed and its subsoil are also regulated.¹³⁸

The administering body for the Convention is the Baltic Marine Environment Protection Commission (HELCOM), set up under the 1974 Convention, which has met annually since the 1974 Convention entered into force. HELCOM's functions include observing the implementation of the Convention, making recommendations on measures, including amendments to the Convention and its Annexes, and defining pollution control criteria and objectives for the reduction of pollution, and objectives concerning measures.¹³⁹ Decisions of the Commission, including recommendations, are taken by unanimity unless provided otherwise in the Convention.¹⁴⁰

For the purposes of its implementation, the Convention requires notification to the Commission, and consultations between parties, whenever an environmental impact assessment of a proposed activity that is likely to cause a significant adverse impact on the marine environment is required by international law or supranational regulations.¹⁴¹ It also requires notification and consultation on pollution incidents, cooperation in combating marine pollution, and general reporting requirements to the Commission.¹⁴² Parties to the Convention need to make available to the public information on the condition of the Baltic Sea, measures taken or planned, permits issued, sampling results, and water quality objectives, even if some restrictions apply on the basis of confidentiality rules.¹⁴³ In 2013, HELCOM adopted a renewed Monitoring and Assessment Strategy.¹⁴⁴

In 2007, the Commission adopted the HELCOM Baltic Sea Action Plan, which determines the actions necessary to 'achieve a Baltic Sea in good environmental status' by 2021.¹⁴⁵ The Action

¹³¹ Art. 3(1).

¹³² Art. 3(2)–(4) and (6). Annex II establishes Criteria for the Use of Best Environmental Practice and Best Available Technology.

¹³³ Art. 4. ¹³⁴ Art. 5; Annex I.

¹³⁵ Art. 6. Annex III contains three Regulations relating to: general provisions; specific requirements governing, inter alia, municipal water sewage, industrial plant water management, and industrial waters; and principles for issuing permits.

¹³⁶ Art. 8. Annex IV contains Regulations on cooperation, assistance in investigations, and definitions, and requires parties to apply the provisions of the Annexes to MARPOL 73/78, subject to the Regulation on sewage.

¹³⁷ Arts. 10 and 11 and Annex V. ¹³⁸ Art. 12 and Annex VI. ¹³⁹ 1992 Baltic Convention, Art. 20.

¹⁴⁰ *Ibid.*, Art. 19(5). ¹⁴¹ *Ibid.*, Art. 7(1) and (2). ¹⁴² *Ibid.*, Arts. 13, 14 and 16. ¹⁴³ *Ibid.*, Arts. 17 and 18.

¹⁴⁴ HELCOM Copenhagen Ministerial Declaration, 3 October 2013.

¹⁴⁵ Adopted on 15 November 2007 in Krakow, Poland, by the HELCOM Extraordinary Ministerial Meeting, available at www.helcom.fi/BSAP/ActionPlan/en_GB/ActionPlan

Plan incorporates the ecosystem approach – not present in the 1992 Convention¹⁴⁶ – and is based on ecological objectives. It focuses on four priority areas: eutrophication, hazardous substances, maritime safety and biodiversity and nature protection.

Pollution from Land-Based Sources

Pollution of the marine environment from land-based sources, including from the atmosphere, is the principal cause of ocean pollution.¹⁴⁷ Such pollution derives from two general sources. First, it arises from substances and energy entering the marine environment by run-off from land, rivers, pipelines and other outfall structures.¹⁴⁸ Second, it arises from or through the atmosphere, generated principally from land-based activities but also from ships and aircraft. Progress in addressing different sources of land-based pollution has been uneven: according to 2006 data, progress was made on reducing pollution from persistent organic pollutants, radioactive substances and hydrocarbons, while conditions have worsened on other matters, such as sewage, nutrients, marine litter, physical alteration and destruction of habitats.¹⁴⁹ In 2012, in the framework of UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA),¹⁵⁰ governments prioritised action on wastewater, nutrients and litter,¹⁵¹ an objective also reflected in Sustainable Development Goal 14.1.¹⁵² Of particular concern in recent years is plastic waste: macro-scale debris poses

¹⁴⁶ The ecosystem approach was incorporated into the Baltic Sea regime in 2003. See First Joint Ministerial Meeting of the Helsinki and OSPAR Commissions, Bremen, 25–26 June 2003, Statement on the Ecosystem Approach to the Management of Human Activities, www.helcom.fi/stc/files/BremenDocs/JointEcosystemApproach.pdf

¹⁴⁷ R. Busby, 'The Convention for the Prevention of Marine Pollution from Land-Based Sources: An Effective Method for Arbitrating International Effluent Pollution Disputes', 5 *California Western International Law Journal* 350 (1975); A. Nollkaemper, 'Balancing the Protection of Marine Ecosystems with Economic Benefits from Land-Based Activities', 27 *Ocean Development and International Law* 153 (1996); D. Hassan, *Protecting the Marine Environment from Land-Based Sources of Pollution: Towards Effective International Cooperation* (Farnham, UK: Ashgate, 2006); D. L. VanderZwaag and A. Powers, 'The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance', 23 *International Journal of Marine and Coastal Law* 423 (2008); D. Hassan, 'Control of Land Based Sources of Marine Pollution – A Regional Overview', 42(2) *Environmental Policy and Law* (2012); A. Kailis, 'The Influential Role of Consensual Knowledge in International Environmental Agreements: Negotiating the Implementing Measures of the Mediterranean Land-Based Sources Protocol (1980)', 17(2) *International Environmental Agreements: Politics, Law and Economics* (2016); D. Osborn, 'Land-Based Pollution and the Marine Environment' (book chapter), *Research Handbook on International Marine Environmental Law* (Cheltenham, UK: Edward Elgar, 2015).

¹⁴⁸ On the relationship between watercourse laws and the protection of oceans, see A. E. Boyle, 'The Law of the Sea and International Watercourses: An Emerging Cycle', 14 *Marine Policy* 151 (1990).

¹⁴⁹ L. Jettif, A. Matte-Baker and M. Schomaker, 'The State of the Marine Environment – Trends and Processes', UNEP/GPA Coordination Office (2006).

¹⁵⁰ The Global Programme of Action (GPA), and an accompanying Declaration, were adopted by 108 states and the EU at a conference held in Washington from 23 October to 3 November 1995. The GPA drew upon relevant provisions of Agenda 21 and the Rio Declaration, as well as the 1985 Montreal Guidelines on the Protection of the Environment Against Pollution from Land-Based Sources (1985 Montreal LBS Guidelines). Since its establishment, it has provided multi-year strategies to guide international action to address different sources of land-based pollution. See www.gpa.unep.org and B. Meier-Wehren, 'The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities', 17 *New Zealand Journal of Environmental Law* 1 (2013).

¹⁵¹ Manila Declaration, UNEP/GPA/IGR.3/CRP/1).

¹⁵² See also Agenda 21, Chapter 17, paras. 17.24–17.29; WSSD Plan of Implementation, para. 33.

hazards to marine wildlife through ingestion or entanglement, and micro-plastics are known to carry noxious chemical substances (chlorine).¹⁵³

There is no specific global convention addressing land-based pollution, and most international legal regulation has developed at the regional level (including the 1992 OSPAR Convention, the 1992 Baltic Convention,¹⁵⁴ and the UNEP Regional Seas Protocols). Beyond the limited approach of UNCLOS,¹⁵⁵ there is no specific regulation of atmospheric pollution, which is treated as any other source of land-based marine pollution. At the same time, international agreements to limit atmospheric pollution, as discussed in Chapters 7 and 8, indirectly protect the marine environment from land-based sources of pollution.

UNCLOS has one provision on land-based sources of pollution, which establishes general obligations, and calls upon states to establish global and regional rules on the matter. Article 207 of UNCLOS requires states to 'prevent, reduce and control pollution of the marine environment from land-based sources, including rivers, estuaries, pipelines and outfall structures'. States must take into account: internationally agreed rules, standards and recommended practices and procedures; characteristic regional features; the economic capacity of developing countries and their need for economic development; and the need 'to minimise, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those which are persistent, into the marine environment'.¹⁵⁶ Article 207 was a cause of action for Ireland's claim against the United Kingdom in respect of the MOX plant.¹⁵⁷

Pollution from land-based sources is also covered by all regional agreements. A number have developed specific protocols or annexes on the matter. For instance, five UNEP Regional Seas Protocols address land-based pollution. In addition, both the OSPAR and the HELCOM Conventions, which focus respectively on the prevention of pollution and restoration of the North-East Atlantic and the Baltic Sea, have as one of their central objectives the prevention and elimination of pollution from land-based sources, including accidents.¹⁵⁸ Under these Conventions, states undertake to prevent and eliminate pollution from land-based sources by substances listed in their Annexes. Unlike the Conventions under UNEP's Regional Seas Protocols, the OSPAR and HELCOM Conventions develop their provisions on land-based pollution through Annexes to their respective Conventions, instead of through separate protocols.¹⁵⁹

The HELCOM Convention and its Annex III on land-based sources of pollution is more developed than the equivalent provisions in the OSPAR Convention. The former provides detailed rules on prevention of pollution from industry and municipalities and from agriculture. HELCOM requires that the release of any harmful substance from point sources be subject to a permit; OSPAR instead allows that they be subject to regulation, without a prior permit requirement. Both regimes are based on the precautionary principle and the polluter pays principle, and require the use of best available techniques for point sources and best environmental practice for point and diffuse sources, using the criteria set out in the framework of the respective Conventions.¹⁶⁰

¹⁵³ GESAMP 2015, p. 52; United Nations World Ocean Assessment 2015, Chapter 20; UNEP, *Marine Plastic Debris and Microplastics – Global Lessons and Research to Inspire Action and Guide Policy Change* (2016).

¹⁵⁴ Art. 6. ¹⁵⁵ Arts. 221 and 222. ¹⁵⁶ Art. 207(1), (4) and (5). ¹⁵⁷ See Chapter 14, p. 664f.

¹⁵⁸ OSPAR, Art. 3; Annex I, Art. 1(3); HELCOM, Art. 6, Annex III.

¹⁵⁹ On the regional seas protocols, see N. Oral, *Regional Co-operation and Protection of the Marine Environment Under International Law: The Black Sea* (Leiden: Martinus Nijhoff, 2013), 210.

¹⁶⁰ Annex III, Reg. 1, HELCOM; Annex I, Art. 1(1) and (2), OSPAR. On specific criteria, see Annex I, 1.1 HELCOM; Appendix 2, OSPAR, which include persistency, toxicity, bioaccumulation, radioactivity, the effect of concentrations, the risk of eutrophication, transboundary significance, the risk of undesirable change in the marine ecosystem and

Besides the identification of specific substances and activities that are to be regulated to combat land-based pollution, both the HELCOM and OSPAR Conventions identify a list of substances that are to be given priority when taking preventive measures: heavy metals, organohalogen compounds, organic compounds of phosphorus and silicon, biocides, oils and hydrocarbons, nitrogen and phosphorus compounds, radioactive substances including wastes, and persistent materials and substances which cause serious effects such as on taste and/or smell.¹⁶¹ Parties have progressively adopted strategies and guidelines to regulate discharges of harmful substances, as well as setting up monitoring and assessment programmes. OSPAR devised specific pollution abatement strategies particularly in its 2010–20 Strategy for the Protection of the Marine Environment; HELCOM through its Ministerial Declarations set key objectives and strategies, which have emphasised marine litter and noise, as well as climate change.¹⁶²

Eight UNEP Regional Seas Protocols address land-based pollution: the 1980 Athens LBS Protocol (amended in 1996), the 1983 Quito LBS Protocol, the 1990 Kuwait LBS Protocol, the 1992 Black Sea LBS Protocol (revised in 2009), the 1999 LBS Protocol, the 2010 Nairobi LBS Protocol and the 2012 Moscow Protocol.¹⁶³ These Protocols provide a general approach to the regulation of land-based sources of pollution, obliging parties to take measures to prevent, control and/or eliminate pollution through the development of programmes and measures, including common emissions standards and standards for use.¹⁶⁴ The amended 1980 Athens LBS Protocol incorporates a broad definition of land-based sources of pollution, and sets as its sole objective the elimination of pollution from land-based sources, abandoning the initial approach to ‘strictly limit’ certain sources of pollution.¹⁶⁵ It also incorporates the notions of ‘best available techniques’ and ‘best environmental practices’ in setting implementation measures.¹⁶⁶ The Kuwait LBS Protocol sets weaker objectives than the other protocols, contemplating only ‘reduction’ of pollution as its most ambitious measure.¹⁶⁷ However, the Kuwait Protocol provides requirement of prior Environmental Impact Assessment,¹⁶⁸ which was not present in prior regional instruments. This requirement also specifies that contracting parties shall ‘adopt measures... in order to ... penalize any act which infringes this provision’. Environmental impact assessment requirements were also incorporated in the 1999 LBS Protocol,¹⁶⁹ 2010 Nairobi LBS Protocol¹⁷⁰ and 2012 Moscow Protocol.¹⁷¹

Parties to the Athens, Quito and Black Sea LBS Protocols must prohibit the discharge of ‘black list’ substances listed in Annex I, based on their high level of toxicity, persistence and bioaccumulation. Parties to the Quito and Black Sea LBS Protocols are to ‘reduce’ the less noxious

irreversibility or durability of effects, interference with legitimate uses of the sea, effects on the taste and/or smell of products for human consumption from the sea, or effects on smell, colour, transparency or other characteristics of the water in the marine environment, distribution patterns, and non-fulfilment of environmental quality objectives.

¹⁶¹ HELCOM, Annex I, 1.2; OSPAR, Appendix 2, para. 3.

¹⁶² HELCOM Copenhagen Ministerial Declaration, 3 October 2013. See e.g. HELCOM Regional Action Plan for Marine Litter in the Baltic Sea (2015).

¹⁶³ The 2009 Black Sea LBS Protocol, the 2010 Nairobi LBS Protocol and the 2012 Moscow Protocol are not yet in force. See Table 11.1 for a list of regional seas agreements.

¹⁶⁴ 1980 Athens LBS Protocol, Arts. 5 and 6; 1983 Quito LBS Protocol, Arts. IV and V (the obligation being slightly less onerous by requiring parties, respectively, to ‘endeavour to prevent, reduce, control and eliminate’ and to ‘endeavour progressively to reduce’).

¹⁶⁵ 1980 Athens LBS Protocol, Arts. 4–5. ¹⁶⁶ 1980 Athens LBS Protocol, Art. 5(4).

¹⁶⁷ 1990 Kuwait LBS Protocol, Art. IV. ¹⁶⁸ 1990 Kuwait LBS Protocol, Art. VIII(1).

¹⁶⁹ 1999 LBS Protocol for the Caribbean region, Art. VI. ¹⁷⁰ 2010 Nairobi LBS Protocol, Art. XIII.

¹⁷¹ 2012 Moscow Protocol for the Caspian Sea region, Art. XII.

substances listed in Annex II ('grey list' substances).¹⁷² The discharge of grey list substances must be authorised, taking account of the characteristics and composition of waste, the discharge site and the receiving marine environment, the availability of waste technologies and the potential impairment of marine ecosystems and seawater uses.¹⁷³

Each Protocol provides for: cooperation on guidelines and standards; the systematic assessment of pollution levels and evaluation of the effectiveness of measures; the exchange of scientific and other information and coordination of research; technical assistance for developing countries; and, in some cases, cooperation where watercourses flow through the territories of two or more countries and consultations where land-based pollution originating in the territory of one party is prejudicing the interests of another.¹⁷⁴ Some protocols require reporting on the process of their implementation.¹⁷⁵ More recent protocols introduce the 'precautionary' and 'polluter pays' principles,¹⁷⁶ and promote public participation and access to information.¹⁷⁷

Pollution by Dumping¹⁷⁸

Pollution by dumping refers to the deliberate disposal of wastes and other matter from non-land-based sources, such as vessels or aircraft. While this source of pollution now raises fewer concerns, there remain gaps in knowledge on implementation, and there is evidence of illegal dumping, including of radioactive waste.¹⁷⁹ This environmental hazard is addressed by UNCLOS, by the 1972 London Convention and its 1996 Protocol, and also by the majority of regional agreements examined above, some of which have been complemented by specific Protocols on dumping.

UNCLOS requires states to adopt laws and regulations to prevent, reduce and control dumping, which laws may not be less effective than global rules and standards. It also requires the establishment of global and regional rules, standards and recommended practices and procedures.¹⁸⁰ In general, dumping within the territorial sea and the EEZ or on the continental shelf

¹⁷² 1983 Quito LBS Protocol, Art. V; 1992 Black Sea LBS Protocol, Art. 4.

¹⁷³ 1983 Quito LBS Protocol, Arts. IV and V and Annex III.

¹⁷⁴ 1980 Athens LBS Protocol, Arts. 7–13; 1983 Quito LBS Protocol, Arts. VI–XII; 1990 Kuwait LBS Protocol, Arts. IX–XII and Annex III; 1992 Black Sea LBS Protocol, Arts. 6, 11, 13, 15 and 16.

¹⁷⁵ 1983 Quito LBS Protocol, Art. VIII; 1999 LBS Protocol for the Caribbean region, Art. XII; 2010 LBS Nairobi Protocol, Art. XVI; 2012 Moscow Protocol, Art. XVII.

¹⁷⁶ 2010 Nairobi LBS Protocol, Art. IV; 2012 Moscow Protocol for the Caspian Sea region, Art. IV(2).

¹⁷⁷ 1999 LBS Protocol for the Caribbean region, Art. X; 2010 LBS Nairobi Protocol, Art. XV; 2012 Moscow Protocol for the Caspian Sea region, Art. XV.

¹⁷⁸ R. N. Duncan, 'The 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes at Sea', 5 *Journal of Maritime Law and Commerce* 299 (1974); G. Winter, 'The Implementation of the Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft', 3 *Zeitschrift für Umweltpolitik* 707 (1980); M. A. Zeppetello, 'National and International Regulation of Ocean Dumping: The Mandate to Terminate Marine Disposal of Contaminated Sewage Sludge', 12 *Ecology Law Quarterly* 619 (1985); E. Hey, 'Hard Law, Soft Law, Emerging International Law and Ocean Disposal Options for Nuclear Waste', 40 *Netherlands International Law Review* 405 (1993); P. Verlaan, 'Current Legal Developments: London Convention and London Protocol', 26 *International Journal of Marine and Coastal Law* 185 (2011); Gi Hooh Hong and Young Joo Lee, 'Transitional Measures to Combine Two Global Ocean Dumping Treaties into a Single Treaty', 55 *Marine Policy* 47 (2015); T. J. Burns, 'Marine Pollution', *The Wiley-Blackwell Encyclopedia of Globalization* (2016). See also www.imo.org/OurWork/Environment/SpecialProgrammesAndInitiatives/Pages/London-Convention-and-Protocol.aspx

¹⁷⁹ United Nations World Ocean Assessment, Summary, 28 (see n. 16).

¹⁸⁰ Art. 210(1), (4) and (6). 'Dumping' is defined similarly to the 1972 London Convention (Art. 1(1)(5)).

must not be carried out without the express prior approval of the coastal state after due consideration of the matter with states which may be adversely affected.¹⁸¹

1972 London Convention and 1996 Protocol

The 1972 London Convention (known as the London Dumping Convention until 1992) is an instrument of global application to all marine waters other than internal waters, which has attracted the support of nearly ninety parties, more than half of which are developing countries.¹⁸² In the early 1990s, parties undertook a review of the Convention, which concluded with the adoption of the 1996 Protocol to the London Convention.¹⁸³ The Protocol, which has been ratified by some fifty states, supersedes the Convention between those parties to the Protocol that are also parties to the Convention.¹⁸⁴ The Convention remains in force, and thus the Convention and the Protocol are parallel regimes, with different parties to each agreement. Although the Protocol entered into force in 2006, even after this date some states chose to become party to the Convention and not to the Protocol. However, a majority of states have ratified both treaties. The IMO provides secretariat functions and also hosts the annual Consultative Meetings of the parties to the Convention and to the Protocol, which in practice are held simultaneously.¹⁸⁵ Overall, the Protocol is more restrictive of dumping practices than the Convention.¹⁸⁶

As noted in the 2016 United Nations World Ocean Assessment:

if the Convention or the Protocol were effectively and consistently implemented, that source of inputs of harmful substances would be satisfactorily controlled. However, there are gaps in knowledge about their implementation. Over half of the States party to the London Convention and the Protocol thereto do not submit reports on dumping under their control. This may mean that there is no such dumping, but it may also mean that the picture presented by the reports that are submitted is incomplete. Some of the world's largest economies have not become party to either agreement, and nothing is known of what is happening with respect to dumping under their control.¹⁸⁷

*1972 London Convention*¹⁸⁸

The objective of the 1972 London Convention is to 'prevent the pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea', and to encourage the development of regional agreements.¹⁸⁹ Dumping is defined by Article III of the Convention as:

¹⁸¹ Art. 210(3) and (5).

¹⁸² London, 29 December 1972, in force 30 August 1975, 1046 UNTS 120, 11 ILM 1294 (1972). Art. III(3), eighty-seven states are party.

¹⁸³ London, 7 November 1996, in force 24 March 2006, amended 2 November 2006, 30 October 2009, 13 October 2013. 36 ILM 1 (1997), forty-eight states are party.

¹⁸⁴ Art. 23. ¹⁸⁵ Art. XIV(2).

¹⁸⁶ On the 1972 London Convention and the 1996 Protocol, see generally www.londonprotocol.imo.org

¹⁸⁷ United Nations World Ocean Assessment, Summary, 28 (see n. 16).

¹⁸⁸ For further information on the 1972 London Convention, see the second edition of this text, at pp. 416–22.

¹⁸⁹ Arts. I and VIII.

1. any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea; or
2. any deliberate disposal at sea of vessels, aircraft, platforms or other man-made structures at sea.

This does not include incidental disposal of waste.¹⁹⁰ Under Article III, 'wastes or other matter' are broadly defined as 'material and substance of any kind, form or description'.

Central to the 1972 London Convention are the rules that prohibit or regulate the dumping of waste. Three categories of wastes are established, each being subject to specific obligations. The dumping of highly hazardous waste substances listed in Annex I (the 'black list') is prohibited, except in emergency situations and after consultation with countries likely to be affected and with the IMO.¹⁹¹ The prohibition does not apply to some Annex I substances.¹⁹² The dumping of Annex II 'special care' substances and wastes (the 'grey list') requires a prior 'special' permit.¹⁹³ The dumping of all other wastes requires a prior 'general' permit.¹⁹⁴ Exceptions to the rules of the London Convention concerning dumping are provided for in relation to the safety of human life and vessels, and emergency situations where unacceptable risk is posed to human health and no other solution is possible.¹⁹⁵ The Convention does not apply to vessels and aircraft entitled to sovereign immunity under international law, although each party must ensure that they act consistently with the Convention.¹⁹⁶

'Special' and 'general' permits are granted by national authorities for matter intended for dumping which is loaded in its territory, or loaded by a vessel or aircraft registered within its territory, or flying its flag when the loading occurs in the territory of a non-party.¹⁹⁷ The grant of 'special' and 'general' permits must comply with certain criteria,¹⁹⁸ and national authorities must keep detailed records of all matter permitted to be dumped, and monitor the condition of the seas.

¹⁹⁰ Art. III(1)(a) and (b). Dumping does not include 'the disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels, aircraft, platforms or man-made structures at sea and their equipment, other than wastes or other matter transported by or to vessels, aircraft, platforms or other man-made structures at sea, operating for the purpose of disposal of such matter . . . or related to the exploration, exploitation and associated offshore processing and associated off-shore processing of sea-bed mineral resources'.

¹⁹¹ Art. IV(1)(a), Art. V(2). Annex I, as amended in 1978, 1980 and 1993, includes organohalogen compounds, mercury and its compounds, cadmium and its compounds, persistent plastics and other persistent synthetic materials, crude oil and its wastes and petroleum products, high-level radioactive wastes or matter, and materials produced for biological and chemical warfare. See also Guidelines for Allocation of Substances to the Annexes to the London Convention, Resolution LDC.31(11) (LDC 11/14, Annex 3).

¹⁹² Annex I, para. 8 (substances which are rapidly rendered harmless by physical, chemical or biological processes in the sea provided that they do not make edible marine organisms unpalatable or endanger human health or that of domestic animals). See Resolution LDC 24(10), Guidelines for the Implementation of Paragraphs 8 and 9 of Annex I to the London Dumping Convention (LDC 10/15, Annex 3); Annex I, para. 10 (trace contaminants). See Regulations for the Control of the Incineration of Wastes and other Matter at Sea, Addendum to Annex I. Para. 10 and the Addendum were adopted as amendments by the third Consultative Meeting of the Contracting Parties in 1978.

¹⁹³ Art. IV(1)(b). Annex II, as amended in 1978 and 1980, includes wastes containing significant amounts of hazardous substances (e.g. arsenic, lead, copper, fluorides, pesticides not covered by Annex I, etc.), large quantities of acids and alkalis, bulky wastes, radioactive wastes not included in Annex I, and certain other non-toxic substances.

¹⁹⁴ Art. IV(1)(c).

¹⁹⁵ Art. V. See Interim Procedures and Criteria for Determining Emergency Situations (LDC V/12, Annex 5).

¹⁹⁶ Art. VII(4). ¹⁹⁷ Art. VI(1)(a) and (b) and (2).

¹⁹⁸ Art. VI(3) and Annex III, as amended in 1989. Resolution LDC 32(11), Amendments to the Guidelines for the Application of Annex III (LDC 11/14, Annex 4).

Parties must report this and other information to the IMO.¹⁹⁹ This system should allow the international community to determine what is being dumped, but in practice reporting requirements are not fully complied with.²⁰⁰

At their Consultative Meetings, parties have adopted a number of amendments to the Annexes and to the Convention, the latter on dispute settlement. These amendments incorporated previous resolutions concerning prohibitions on dumping industrial wastes, radioactive wastes and other radioactive matter, as well as the prohibition on incineration at sea of industrial wastes and of sewage sludge.²⁰¹

1996 Protocol

The 1996 Protocol, which entered into force in 2006, was the culmination of the process of reforms initiated in the framework of the 1972 Convention. It provides a more restrictive approach to the regulation of dumping, by generally prohibiting all forms of dumping, except for some listed substances. This is the reverse approach to the 1972 Convention, which permits dumping at sea, with the exception of some prohibited substances.²⁰² The Protocol also has a broader geographical scope, regulating aspects related to storage of wastes on the seabed, as well as offshore installations.²⁰³ It sets a broader objective than the Convention, by aiming to 'protect and preserve the marine environment from all sources of pollution'. To this end, parties are required to take effective measures to prevent, reduce and, where practicable, eliminate marine pollution caused by dumping or incineration at sea.²⁰⁴

The Protocol incorporates the 'polluter pays' principle and the 'precautionary approach' with respect to environmental protection from dumping of wastes or other matter.²⁰⁵

As part of its 'reverse list' approach, Annex 1 to the Protocol only permits dumping, with a permit, of the following substances: dredged material; sewage sludge; fish waste, or material resulting from industrial fish processing operations; vessels and platforms or other human-made structures at sea; inert, inorganic geological material; organic material of natural origin; bulky items and similarly harmless materials; and carbon dioxide streams from carbon dioxide capture processes for sequestration.²⁰⁶ The Protocol expressly prohibits incineration of wastes at sea,

¹⁹⁹ Art. VI(1)(c) and (d). On notification of permits, see Procedure for the Notification of Permits Issued for the Dumping of Wastes and Other Matter at Sea (LDC 12/16, Annex 2). In compliance with Art. VII, parties have developed a Dumping Incident Information Form.

²⁰⁰ See e.g. 'Status of Compliance with the Notification and Reporting Requirements under Article VI(4) of the London Convention 1972', IMO Doc. LC 27/INF.2, 25 July 2005.

²⁰¹ Addendum to Annex I to the Convention: 'Regulations for the Control of Incineration of Wastes and Other Matter at Sea', adopted by the third Consultative Meeting of Contracting Parties in 1978 in conjunction with para. 10 of Annex I, in force 11 March 1979; Amendments to the Convention adopted by the third Consultative Meeting of Contracting Parties in 1978 concerning procedures for the settlement of disputes, not yet in force; Amendment to Annex I, para. 5, concerning petroleum products, adopted in 1980 by the fifth Consultative Meeting of Contracting Parties, in force 11 March 1981; Amendments to Annex III (on the scientific basis for assessing wastes) adopted in principle by the tenth Consultative Meeting of Contracting Parties in 1986 (Res. LDC.26(10), confirmed by Res. LDC.37(12) in 1989), in force 19 May 1990. See also Amendments adopted by the sixteenth Consultative Meeting of Contracting Parties: Res. LC.49(16) adopted on 12 November 1993: Amendments to the Annexes to the London Convention 1972 concerning phasing out sea disposal of industrial wastes; Resolution LC.50(16) adopted on 12 November 1993: Amendment to Annex I to the London Convention 1972 concerning the prohibition of incineration at sea of industrial wastes and sewage sludge; Resolution LC.51(16) adopted on 12 November 1993: Amendments to the Annexes to the London Convention 1972 concerning the prohibition of dumping of radioactive wastes and other radioactive matter, all in force on 20 February 1994.

²⁰² Art. 4. ²⁰³ Application to internal waters is voluntary (Art. 7(2)). ²⁰⁴ Art. 2. ²⁰⁵ Art. 3(1).

²⁰⁶ Annex 1.

which had already been prohibited under the 1972 Convention through amendments in 1991 and 1993;²⁰⁷ and the export of wastes or other matter to other countries for dumping or incineration at sea.²⁰⁸

In a move designed to facilitate the deployment of carbon capture and storage technologies for the mitigation of climate change, amendments made to the Protocol in 2006 allowed the storage of carbon dioxide under the seabed from 10 February 2007. The amendments add 'CO₂ streams from CO₂ capture processes for sequestration' to Annex I (which lists substances whose dumping is permitted). However, CO₂ streams may only be considered for dumping if: disposal is made into a sub-seabed geological formation; they consist overwhelmingly of carbon dioxide; and no wastes or other matter are added for the purpose of disposing of them.²⁰⁹ As with other substances, any such deposit is to be subject to prior permit and assessment in accordance with Annex 2 of the Protocol. In 2012, parties to the Protocol revised the Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations.²¹⁰

By contrast, dumping in the context of iron ocean fertilisation practices – advocated by some as a climate change mitigation measure through stimulation of primary productivity in the oceans – has not been accepted under the London Convention and the 1996 Protocol. In 2008, prompted by the interest of a corporation to use fertilisation to generate carbon credits, parties to these agreements decided, taking into consideration the precautionary approach, against allowing these activities.²¹¹ In 2012, after a commercial ocean fertilisation activity was undertaken off Canada's west coast without knowledge or authorisation of the government of Canada, parties issued a statement of concern.²¹² Thereafter, parties considered formally regulating this activity, and other marine geoengineering activities, to avoid any gaps in the regime. In 2013, they formalised the regulation of marine geoengineering activities by amending the Protocol, prohibiting these activities except for scientific purposes.²¹³

Regional Agreements

Nearly all regional agreements for marine conservation contain general provisions to prevent marine pollution caused by dumping. A number of them have developed specific protocols or annexes on the matter. This is the case for the 1992 OSPAR Convention, and the UNEP Regional Seas Programme's 1976 Barcelona Dumping Protocol, 1986 Noumea Dumping

²⁰⁷ Art. 5. ²⁰⁸ Art. 6.

²⁰⁹ The second meeting of contracting parties in November 2007 adopted 'Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations'.

²¹⁰ J. Garrett and S. McCoy, 'Carbon Capture and Storage and the London Protocol: Recent Efforts to Enable Transboundary CO₂ Transfer', *Energy Procedia* 37 (2013), 7747; T. Dixon et al., 'International Marine Regulation of CO₂ Geological Storage. Developments and Implications of London and OSPAR', *Energy Procedia* 1 (2009), 4503.

²¹¹ Res. LC-LP.1(2008) on the regulation of ocean fertilisation, 31 October 2008; Res. LC-LP.2(2010) on the assessment framework for scientific research involving ocean fertilisation, 14 October 2010.

²¹² Statement of Concern Regarding the Iron Fertilization on Ocean Waters West of Canada. LP 7. LC 34/15, Annex 7 (2012).

²¹³ Resolution LP.4(8) on the Amendment to the London Protocol to Regulate the Placement of Matter for Ocean Fertilization and Other Marine Geoengineering Activities, 18 October 2013. Amendments introduced a definition of marine geoengineering in Article 1 (Definitions); a new Article 6bis which prohibits placement of matter for marine geoengineering activities listed in a new Annex 4 unless Annex 4 allows them, and new Annexes 4 and 5. See T. Dixon et al., 'Update on the London Protocol – Developments on Transboundary CCS and on Geoengineering', 63 *Energy Procedia*, 6623–8 (2014); D. Freestone and R. Rayfuse, 'Ocean Iron Fertilization and International Law', 364 *Marine Ecology Progress Series* 227 (2008).

Protocol, and 1992 Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping.

The 1992 OSPAR Convention replaced the 1972 Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo Dumping Convention).²¹⁴ The Oslo Dumping Convention was the first regional agreement to regulate and prohibit dumping at sea, and, through its Commission (OSCOM), states adopted, between 1974 and 1998, a large number of resolutions and recommendations. Of particular note were those relating to the export of wastes for disposal at sea,²¹⁵ and establishing guidelines for the disposal of offshore installations.²¹⁶ In 1989, OSCOM agreed to cease dumping of industrial wastes in the North Sea by 31 December 1989 and in other Convention waters by 31 December 1995, with some exceptions.²¹⁷ In 1990, the parties agreed to phase out the dumping of sewage sludge by the end of 1998,²¹⁸ and to terminate all incineration at sea by 31 December 1991.²¹⁹

The 1992 OSPAR Convention incorporates many of the earlier treaty's resolutions and decisions. Under Annex II to the 1992 Convention, the parties must prevent and eliminate pollution by dumping or incineration of wastes or other matter,²²⁰ and pollution from the abandonment of vessels or aircraft as a result of accidents.²²¹

Like the 1996 Protocol to the London Convention, the 1992 OSPAR Convention reverses the traditional approach to defining waste: 'wastes or other matter' includes everything except human remains, offshore installations, offshore pipelines and unprocessed fish and fish offal discarded from fishing vessels.²²²

Annex II prohibits the incineration and dumping of all wastes or other matter, except for those expressly excluded by the Annex.²²³ It permits, subject to authorisation or regulation, the dumping of dredged material, certain inert material of natural origin, and fish waste from industrial fish processing operations.²²⁴ OSPAR has phased out several types of waste disposal. In 1998, it prohibited dumping of sewage sludge, in 1999 of radioactive waste²²⁵ and in 2004 of vessels or aircraft containing substances that result or are likely to result in harm or interference with other legitimate uses of the sea.²²⁶ In 2007, the OSPAR Commission adopted a decision that allows the storage of CO₂ streams in geological formations, prior to authorisation or

²¹⁴ Oslo, 15 February 1972, in force 7 April 1974, 932 UNTS 3; amended by Protocol of 2 March 1983, in force 1 September 1989.

²¹⁵ OSCOM Recommendation 88/1 (1988).

²¹⁶ OSCOM, Guidelines for the Disposal of Offshore Installations at Sea, The Hague, 12 June 1991. See E. A. Kirk, 'OSPAR Decision 98/3 and the Dumping of Offshore Installations', 48 *International and Comparative Law Quarterly* 458 (1999).

²¹⁷ OSCOM Decision 89/1 (1989) and Report on Justification for the Issue of Permits for the Dumping of Industrial Wastes at Sea (OSCOM, 1989).

²¹⁸ OSCOM Decision 90/1 (1990). ²¹⁹ OSCOM Decision 90/2 (1990). ²²⁰ Art. 4 and Annex II.

²²¹ Annex II, Art. 8. ²²² Art. 1(o).

²²³ Annex II, Arts. 2 and 3(1). The Annex does not apply to 'any deliberate disposal of wastes or other matter from offshore installations or disposal of offshore installations and offshore pipelines' (Art. 1). Art. 7 provides further exceptions on the grounds of, inter alia, *force majeure*, stress and safety. Art. 10(3) provides that the Annex does not 'abridge the sovereign immunity to which certain vessels are entitled under international law'.

²²⁴ Annex II, Arts. 3(2) and 4(1). Authorisations and regulation must be in accordance with the criteria, guidelines and procedures adopted by the Commission under Art. 6 of Annex II (*ibid.*, Art. 4(1)(b)).

²²⁵ Annex II, Art. 3(3)(a), (b) and (c). The United Kingdom and France, desiring to retain the option of dumping these radioactive substances, negotiated an exception to the rule which left the way open for them to resume dumping after 1 January 2008. On 9 February 1999, the OSPAR Commission adopted Decision 98/2 on Dumping of Radioactive Waste, as a result of which the exceptions granted to the United Kingdom and France ceased to have effect.

²²⁶ Annex II, Art. 4(2).

regulation.²²⁷ The OSPAR Convention further prohibits the ‘placement’ of matter in the maritime area for a purpose other than that for which it was originally designed without authorisation or regulation.²²⁸ Annex II also prohibits dumping of low- and intermediate-level radioactive substances, including wastes.

HELCOM prohibits all forms of dumping at sea, except of dredged material, which is to be subject to a special permit, and in the case of an emergency when the safety of human life or a vessel or aircraft is threatened.²²⁹

Three UNEP Regional Seas Protocols require parties to prevent dumping from ships and aircraft: the 1976 Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (1976 Barcelona Dumping Protocol); the 1986 Protocol Concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region (1986 Noumea Dumping Protocol); and the 1992 Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping (1992 Black Sea Dumping Protocol). Each applies to the same geographic area as defined by their respective framework Conventions. They use the same definitions as the 1972 London Convention²³⁰ and similarly regulate three categories of substances: Annex I substances cannot be dumped except in emergency or exceptional cases; Annex II substances can only be dumped after a ‘special’ permit has been granted by the competent national authorities; and the dumping of all other wastes requires a prior ‘general’ permit from the competent national authorities.²³¹ The Protocols require the reporting of incidents or conditions giving rise to suspicion that dumping is taking place.²³² Special and general permits must be issued for wastes loaded in the territory of the party or by a ship or aircraft registered in its territory or flying its flag when the loading occurs within the territory of a non-party, after taking account of the factors set out in their respective Annex III.²³³ Meetings of the Parties to the Protocols ensure review of the implementation of the Protocols, the review and amendment of the Annexes, and the consideration of the records of permits issued.²³⁴ Amendments to the Annexes to the Protocols require a three-fourths majority vote of the parties.²³⁵

Prohibitions on dumping have also been adopted in relation to the Antarctic region.²³⁶ The 1985 Rarotonga South Pacific Nuclear Free Zone Treaty prohibits the dumping of radioactive waste and radioactive matter at sea anywhere within the South Pacific Nuclear Free Zone.²³⁷

²²⁷ OSPAR Decision 2007/2 on the Storage of Carbon Dioxide Streams in Geological Formations, in force 15 January 2008.

²²⁸ Annex II, Art. 5. ²²⁹ Art. 11(2) and (4).

²³⁰ 1976 Barcelona Convention, Art. 3(2), (3) and (4); 1986 Noumea Convention, Art. 2(b) and (c); 1992 Black Sea Convention, Art. II(3).

²³¹ 1976 Barcelona Protocol, Arts. 4, 5, 6, 8 and 9; 1986 Noumea Dumping Protocol, Arts. 4, 5, 6, 9 and 10 (radioactive waste dumping is prohibited by the 1986 Noumea Convention); 1992 Black Sea Dumping Protocol, Arts. 2, 3 and 4.

²³² 1976 Barcelona Protocol, Art. 12; 1986 Noumea Dumping Protocol, Art. 14; 1992 Black Sea Dumping Protocol, Art. 9.

²³³ 1976 Barcelona Protocol, Arts. 7 and 10(2); 1986 Noumea Dumping Protocol, Arts. 7 and 11(2) (in addition, Art. 8 and Annex IV provide for specific criteria for the allocation of substances to the Annexes); 1992 Black Sea Dumping Protocol, Arts. 7 and 8.

²³⁴ 1976 Barcelona Protocol, Art. 14; 1986 Noumea Dumping Protocol, Art. 16; 1992 Black Sea Convention, Art. XIX.

²³⁵ 1976 Barcelona Protocol, Art. 14(3); 1986 Noumea Dumping Protocol, Art. 16(3); 1992 Black Sea Convention, Art. XX.

²³⁶ Chapter 13, p. 633.

²³⁷ Rarotonga, 6 August 1985, in force 11 December 1986, 24 ILM 1142 (1985); thirteen states are party.

Pollution from Vessels

The last fifty years have witnessed a significant increase in marine traffic.²³⁸ Between 1970 and 2012, seaborne carriage of oil and gas nearly doubled, that of general cargo quadrupled, and that of grain and minerals nearly quintupled. Over 75 per cent of international trade by volume is carried by sea.²³⁹ A significant impact of shipping is marine pollution from vessels, caused by operational discharges from ships, such as cleaning of tanks or deballasting, or from discharges following accidents. The latter, in particular, have given high visibility to problems deriving from vessel pollution, due to their often-dramatic environmental consequences, mainly involving oil spills. Individual accidents prompted the development of different international instruments to prevent pollution from vessels, particularly MARPOL 73/78 and the Convention on Civil Liability for Oil Pollution Damage.²⁴⁰ Possibly as a result of stricter regulation and implementation, in the past forty years the number of oil spills has steadily decreased.²⁴¹

One of the most recent environmental disasters was the accident of the *Prestige* in 2002 off the coast of Spain. The incident bore important consequences, which were reflected in the gravity of the measures imposed by states. The case of the *Prestige* reached the European Court of Human Rights in the decision of *Mangouras v. Spain*, in which the master of the *Prestige* challenged the level of the bond imposed in Spain (€3 million), alleging that it was too high and breached Article 5(3) of the ECHR, which guarantees the release of detainees prior to trial with allowance for reasonable bail.²⁴² The Grand Chamber found that the amount of bail, although high, had not been disproportionate in view of the legal interest being protected, the seriousness of the offence in question and the disastrous environmental and economic consequences of the oil spill. Accordingly, it held that there had been no violation of Article 5(3) of the ECHR.²⁴³ In reaching its decision the Court stated:

²³⁸ Y. Dinstein, 'Oil Pollution from Ships and Freedom of the High Seas', 3 *Journal of Maritime Law and Commerce* 363 (1971–2); P. S. Dempsey and L. L. Hellings, 'Oil Pollution by Vessels – An Environmental Tragedy: The Legal Regime of Flags of Convenience, Multilateral Conventions and Coastal States', 10 *Denver Journal of International Law and Policy* 37 (1980); D. W. Abecassis and R. L. Jarashow, *Oil Pollution from Ships* (London: Stevens, 1985, 2nd edn); D. Bodansky, 'Protecting the Marine Environment from Vessel-Source Pollution: UNCLOS III and Beyond', 18 *Ecology Law Quarterly* 719 (1991); C. de la Rue and C. Anderson, *Shipping and the Environment* (London: Routledge, 1998); A. K. Tan, *Vessel-Source Marine Pollution: The Law and Politics of International Regulation* (Cambridge: Cambridge University Press, 2006); V. Edwards, 'Ship-Source Pollution', 21 *Journal of Environmental Law* 155 (2009); R. Churchill, 'Port State Jurisdiction Relating to the Safety of Shipping and Pollution from Ships – What Degree of Extra-territoriality?', 31 *The International Journal of Marine and Coastal Law* 442 (2016); J. D. Fry and I. Amesheva, 'Oil Pollution and the Dynamic Relationship Between International Environmental Law and the Law of the Sea', 47 *Georgetown Journal of International Law* 1001 (2016).

²³⁹ United Nations World Ocean Assessment, Chapter 17, Shipping, 1 (see n. 16).

²⁴⁰ Regional Seas Conventions have included at least one provision on pollution from ships: 1976 Barcelona Convention, Art. 6 (as revised in 1995); 1978 Kuwait Convention, Art. IV; 1981 Abidjan Convention, Art. 6; 1981 Lima Convention, Art. 4; 1982 Jeddah Convention, Art. IV; 1985 Nairobi Convention, Art. 5; 1986 Noumea Convention, Art. 6; 1986 Cartagena Convention, Art. 5; 1992 Bucharest Convention, Art. VIII; 2002 Antigua Convention, Art. 6.1(b).

²⁴¹ United Nations World Ocean Assessment, 25–6 (see n. 16).

²⁴² *Mangouras v. Spain* (Grand Chamber), App. No. 12050/04 (2009), Judgment of 28 September 2010. The case was referred to the Grand Chamber after an initial decision handed down by the Third Section of the Court. See T. Treves, 'Human Rights and the Law of the Sea', 28 *Berkeley Journal of International Law* 1 (2010).

²⁴³ *Mangouras v. Spain* (Grand Chamber), para. 57.

Against this background the Court cannot overlook the growing and legitimate concern both in Europe and internationally in relation to environmental offences. This is demonstrated in particular by States' powers and obligations regarding the prevention of maritime pollution and by the unanimous determination of States and European and international organisations to identify those responsible, ensure that they appear for trial and, if appropriate, impose sanctions on them.²⁴⁴

UNCLOS Rules

Reflecting international concerns at the time of its negotiation, UNCLOS established a number of rules on pollution from vessels, placing primary responsibility on flag states, while recognising the rights of port and coastal states to prevent pollution within their jurisdiction. Under Article 211 of UNCLOS, states must establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels, and adopt routing systems to minimise the threat of accidents that might cause such pollution. Such rules should include measures relating to prompt notification to coastal states in the case of incidents.²⁴⁵ UNCLOS establishes specific obligations for flag states with respect to vessels flying their flag or of their registry. They must adopt national laws which 'at least have the same effect as that of generally accepted international rules and standards',²⁴⁶ and effective enforcement measures.²⁴⁷ In addition, Article 211 establishes the rights of port and coastal states to adopt measures for the prevention, reduction and control of marine pollution within their national jurisdiction. Port states are required to give 'due publicity' to their measures and communicate them to the competent international organisations.²⁴⁸ Coastal states may adopt measures in respect of their EEZs for the purpose of enforcement, which could even deviate from generally accepted international rules and standards under special circumstances.²⁴⁹ In all instances, port and coastal states shall have due regard to the right of innocent passage.²⁵⁰

Concerning the right of the coastal state to take enforcement action, in 2010 ITLOS decided a case that presented some parallels with the 'prompt release' cases referred to further below.²⁵¹ The *M/V Louisa*, flagged to Saint Vincent and the Grenadines, had been boarded, searched and detained in a Spanish port on grounds that it was an instrument for carrying out the crime of possession and depositing of weapons of war as well as interfering with Spanish historical patrimony. Under Article 290, Saint Vincent and the Grenadines sought provisional measures to prevent 'serious harm to the marine environment'.²⁵² The ship had been bunkered with 5,000 gallons of lubrication oil and held an unknown quantity of diesel fuel as well. Saint Vincent and the Grenadines considered that the vessel should be released to prevent environmental damage resulting from any possible oil discharge from the vessel. ITLOS held that it was not necessary to

²⁴⁴ *Ibid.*, para. 86. In reaching its decision, the Chamber referred to UNCLOS, the International Convention on Civil Liability for Oil Pollution Damage, the International Convention for the Prevention of Pollution from Ships and its Protocol (MARPOL 73/78), the practice of ITLOS in relation to what constitutes a reasonable bond, and the use of criminal law as a means of enforcing environmental obligations imposed by European and international law. See also paras. 46, 47 and 89.

²⁴⁵ Art. 211(1) and (6). ²⁴⁶ Art. 211(2). ²⁴⁷ Art. 217. ²⁴⁸ Art. 211(3). ²⁴⁹ Art. 211(4), (5) and (6).

²⁵⁰ Art. 211(3) and (4). ²⁵¹ See pp. 532–3.

²⁵² *The M/V 'Louisa' case (Saint Vincent and the Grenadines v. Kingdom of Spain)*, Merits, Judgment of 28 May 2013, at www.itlos.org/en/cases/list-of-cases/case-no-18. See Y. Tanaka, 'A Note on the M/V "Louisa" Case', 45 *Ocean Development & International Law* 2 (2014).

order provisional measures in order to protect the marine environment in light of the assurances given by Spain in relation to continuous monitoring of the ship and the special attention being given to it in light of the fact it was still loaded with oil and fuel and the existence of a protocol for reacting to threats of any kind of environmental accident in the port in which the ship was being held.²⁵³ In reaching its decision, the Tribunal took into consideration the obligation of states to protect and preserve the marine environment, as reflected in Article 192 of UNCLOS, and that 'the parties should in the circumstances act with prudence and caution to prevent serious harm to the marine environment', recalling its Order in the *Southern Bluefin Tuna* case.²⁵⁴

MARPOL 73/78

The main international convention regulating pollution from vessels is the International Convention for the Prevention of Pollution from Ships, often referred to as MARPOL 73/78, which was first adopted at the International Conference on Marine Pollution convened by the IMO in 1973 to replace the 1954 Oil Pollution Convention. MARPOL 1973, the original treaty,²⁵⁵ was modified by the 1978 Protocol (MARPOL 1978) before the parent Convention entered into force.²⁵⁶ The detailed rules on pollution from ships are set out in six Annexes to the Convention, the last of which was introduced by the Protocol of 1997. Further clarifications to various provisions of MARPOL 73/78 have been adopted by the IMO Marine Environment Protection Committee (MEPC) in the form of resolutions setting out unified and authoritative interpretations or amendments to the Convention. MARPOL 73/78 has attracted widespread support, although the Annexes have received less support.

MARPOL 73/78 establishes specific international regulations to implement the objective of completely eliminating intentional pollution of the marine environment by oil and other harmful substances and minimising accidental discharges. This objective has not yet been accomplished, even though the substantive obligations are among the most precise and comprehensive in any international environmental agreement. The parties agree to give effect to the provisions of the Convention, which includes, unless expressly provided otherwise, the Protocols and Annexes.²⁵⁷ MARPOL 73/78 establishes a framework for the adoption of the regulations in the Annexes, and sets out basic definitions. 'Harmful substances' include:

²⁵³ Paras. 74, 75 and 83.

²⁵⁴ Paras. 76 and 77. Judge Wolfrum, in his Dissenting Opinion, stated that the inclusion of protection of the marine environment as a reason for prescribing provisional measures reflected 'the change of international law from a mere mechanism providing for the coordination of States' activities to a legal system which also recognizes and preserves common values of the community of States'. See also the Separate Opinion of Judge Paik. On the *Southern Bluefin Tuna* case, see pp. 528-9.

²⁵⁵ International Convention for the Prevention of Pollution from Ships, London, 2 November 1973, 12 ILM 1319 at 1434 (1973).

²⁵⁶ Protocol Relating to the 1973 International Convention for the Prevention of Pollution from Ships, London, 17 February 1978, in force 2 October 1983, 17 ILM 546 (1978). Before MARPOL 1973 entered into force, it was recognised that the provisions of Annex II would be difficult for even the most economically advanced states to comply with. MARPOL 1978 was therefore negotiated and adopted to establish a new instrument which provided that the new Convention comprised the 1978 Protocol and its Annex *and* MARPOL 1973 as amended by MARPOL 1978, and that the provisions of MARPOL 1973 and MARPOL 1978 should be 'read and interpreted together as one single instrument' (MARPOL 1978, Art. 1). MARPOL 1978 delayed the implementation of Annex II and amended one of the provisions concerning the communication of information (MARPOL 1978, Arts. II and III); 154 states, which represent more than 99 per cent of the world's ship tonnage, are party to MARPOL 73/78 including Annexes I and II.

²⁵⁷ MARPOL 73/78, Art. 1.

any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.²⁵⁸

The definition of ‘discharge’ is similarly broad, and covers intentional and unintentional releases from a ship, including ‘any escape, disposal, spilling, leaking, pumping, emitting or emptying’; however, it does not include dumping within the meaning of the 1972 London Convention, releases directly arising from exploration and exploitation of seabed mineral resources, or releases for certain scientific research.²⁵⁹ MARPOL 73/78 applies to ships that are entitled to fly the flag of a party or operate under the authority of a party, but it does not apply to warships or other state-owned ships operated by a state and used only on governmental non-commercial service.²⁶⁰ The parties must prohibit and sanction violations and accept certificates required by the regulations which are prepared by other parties as having the same validity as their own certificates.²⁶¹ A ship which is in the port or offshore terminal of a party may be subject to an inspection to verify the existence of a valid certificate unless there are ‘clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of that certificate’.²⁶² Where that is the case or where no certificate exists, the inspecting party must ensure that the ship does not sail ‘until it can proceed to sea without presenting an unreasonable threat of harm to the marine environment’. MARPOL 73/78 requires parties to apply the Convention to ships of non-parties so as to ensure that ‘no more favourable treatment is given to such ships’.²⁶³ MARPOL 73/78 also provides for the detection of violations and enforcement, such as in-port inspections to verify whether ships have discharged harmful substances, reporting requirements on incidents involving harmful substances, the communication of information to the IMO, and technical cooperation.²⁶⁴ Disputes are to be settled by negotiation or arbitration.²⁶⁵ MARPOL 73/78 includes six Annexes. Annexes I and II bind all parties, whereas Annexes III, IV, V and VI are options which a state may declare it does not accept when first becoming a party to the Convention or may subsequently accede to.²⁶⁶ All Annexes have been amended multiple times.²⁶⁷

Annex I: Pollution by Oil

Annex I to MARPOL 73/78 comprises twenty-six Regulations for the Prevention of Pollution by Oil and six Appendices. It entered into force on 2 October 1983.²⁶⁸ Some of its most significant

²⁵⁸ Art. 2(2). ²⁵⁹ Art. 2(3).

²⁶⁰ Art. 3(1) and (3); warships and other state-owned ships must, however, act in a manner which is consistent, so far as is reasonable and practicable, with the Convention (*ibid.*).

²⁶¹ Art. 5(1) and (2). ²⁶² Art. 5(2). ²⁶³ Art. 5(4).

²⁶⁴ Arts. 6, 8, 11 and 17. Protocol I sets out detailed Provisions Concerning Reports on Incidents Involving Harmful Substances. See also IMO Assembly Res. A.648(16) on general principles for ship reporting systems and ship reporting requirements, including guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants, 19 October 1989.

²⁶⁵ Art. 10 and Protocol II. ²⁶⁶ Art. 14.

²⁶⁷ For all amendments see www.imo.org/en/About/Conventions/StatusOfConventions/Documents/List%20of%20instruments.pdf

²⁶⁸ Amendments to Annex I: MEPC.141(54), entry into force 1 August 2007; MEPC.164(56), entry into force 1 December 2008; MEPC.186(59), entry into force 1 January 2011; MEPC.187(59), entry into force 1 January 2011; MEPC.189(60), entry into force 1 August 2011; MEPC.190(60), entry into force 1 August 2011; MEPC.216(63), entry into force 1 August 2013; MEPC.235(65), entry into force 1 October 2014; MEPC.238(65), entry into force 1 January 2015;

amendments were made to introduce double-hull requirements following notorious oil pollution accidents, such as *Exxon Valdez* in 1989, *Erika* in 1999, and *Prestige* in 2002. In 2004, the MEPC adopted an entire revision of Annex I, which incorporated all the amendments made to the Annex and modified its structure. It entered into force in 2007, and in that same year it was subsequently amended.²⁶⁹ Annex I is divided into seven Chapters. Chapter 1 establishes 'General' provisions, including definitions and scope of application. Nine areas are designated as 'special areas' for which the prohibition on discharges is even stricter: the Mediterranean Sea, the Baltic Sea, the Black Sea, the Red Sea, the 'Gulf area', the Gulf of Aden, the Antarctic, the 'North West European Waters' and the Oman area of the Arabian Sea.²⁷⁰ Chapter 2 provides rules concerning surveys and inspections of oil tankers and the issuing of an International Oil Pollution Prevention Certificate. Chapter 3 on requirements for machinery spaces of all ships and Chapter 4 on requirements for oil tankers introduce a number of safety measures, including double-hull requirements. After a revision of Annex I, single hulls were to be phased out by 2010 – with some exceptions.²⁷¹ Chapter 5 addresses oil pollution emergencies; Chapter 6 reception facilities; and Chapter 7 establishes requirements for fixed or floating platforms, such as drilling rigs. In 2009, revisions added a new Chapter 8, on prevention of pollution during transfer of oil cargo between oil tankers at sea, and in 2010 Chapter 9 was introduced, on special requirements for the use or carriage of oils in the Antarctic area.

Annex II: Noxious Liquid Substances in Bulk

Annex II, which establishes Regulations for the Control of Pollution by 'Noxious Liquid Substances in Bulk', entered into force on 6 April 1987, as amended by the MEPC.²⁷² It comprises eighteen Regulations and a number of Appendices. Regulations deal with definitions, application and categorisation of substances; the discharge of residues inside and outside 'special areas'; pumping, piping and unloading arrangements; reception facilities and cargo record books; surveys and certification; requirements for minimising accidental pollution; and the carriage and discharge of oil-like substances. The discharge of residues of about 250 substances is allowed only to reception facilities under certain conditions. No discharge of residues containing noxious substances is permitted within twelve miles of the nearest land.²⁷³

Annex III: Harmful Substances Carried by Sea in Packaged Form

The Regulations for the Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form, set out in the draft revised Annex III to MARPOL 73/78, entered into force on 1 July 1992.²⁷⁴ Annex III, which is implemented through the IMO International Maritime Dangerous Goods Code,²⁷⁵ includes Regulations on packing, marking and labelling,

MEPC.246(66), entry into force 1 January 2016; MEPC.248(66), entry into force 1 January 2016; MEPC.256(67), entry into force 1 March 2016; MEPC.266(68), entry into force 1 January 2017; MEPC.265(68), entry into force 1 January 2017; MEPC.276(70), entry into force 1 March 2017.

²⁶⁹ Res. MEPC.117(52), 15 October 2004. ²⁷⁰ Annex I, Regulation 1. ²⁷¹ Annex I, Regulation 20.

²⁷² Res. MEPC.17(22), 1985. Amendments to Annex II: MEPC.216(63), entry into force 1 August 2013; MEPC.238(65), entry into force 1 January 2015; MEPC.246(66), entry into force 1 January 2016; MEPC.265(68), entry into force 1 January 2017; MEPC.270(69), entry into force 1 September 2017.

²⁷³ Annex II, Regulations 1–18.

²⁷⁴ Amendments to Annex III: MEPC.246(66), entry into force 1 January 2016; MEPC.257(67), entry into force 1 March 2016.

²⁷⁵ See IMO Assembly Res. A.81(IV).

documentation, stowage, and quantity limitations.²⁷⁶ It also prohibits the jettisoning of harmful substances except for safety reasons.²⁷⁷

Annex IV: Sewage from Ships

The Regulations for the Prevention of Pollution by Sewage from Ships, set out in Annex IV to MARPOL 73/78, entered into force in 2003.²⁷⁸ The Regulations address such matters as surveys and certification,²⁷⁹ and facilities for reception of sewage.²⁸⁰ They prohibit, with some exceptions, the discharge of sewage into the sea, unless the sewage complies with disinfection requirements or the ship has an approved sewage treatment plant, or is situated in the waters of a state imposing less stringent requirements.²⁸¹ In 2011 the Baltic Sea was designated a Special Area subject to stricter measures for the reception of sewage.²⁸²

Annex V: Prevention of Pollution by Garbage from Ships

The Regulations for the Prevention of Pollution by Garbage from Ships, set out in Annex V to MARPOL 73/78, entered into force on 31 December 1988.²⁸³ The Regulations apply to all ships, and regulate different types of garbage, subject to rules of special application, special areas and exceptions.²⁸⁴ The disposal from ships into the sea of all plastics is prohibited,²⁸⁵ dunnage, lining and packing materials which float cannot be disposed of within 25 nautical miles of land; disposal of food waste and all other garbage is prohibited within 12 nautical miles of land, unless it has passed through a comminuter or grinder, in which case it may not be disposed of within 3 nautical miles of land.²⁸⁶ Except for food wastes, no garbage may be disposed of from any fixed or floating platform for the exploration, exploitation and associated offshore processing of seabed mineral resources, and from all ships when alongside or within 500 metres.²⁸⁷ For special areas, more stringent requirements apply, such as a prohibition on the disposal of all plastics and all other garbage and rules on reception facilities located in such areas.²⁸⁸

Annex VI: Air Pollution from Ships

The Regulations for the Prevention of Air Pollution from Ships, set out in Annex VI to MARPOL 73/78, were adopted by a Protocol of 26 September 1997. The Annex entered into force on

²⁷⁶ Annex III, Regulations 2–6. ²⁷⁷ Annex III, Regulation 7.

²⁷⁸ Amendments to Annex IV of MARPOL: MEPC.115(51), as at 1 August 2005; MEPC.143(54), entry into force 1 August 2007; MEPC.164(56), entry into force 1 December 2008; MEPC.200(62), entry into force 1 January 2013; MEPC.216(63), entry into force 1 August 2013; MEPC.246(66), entry into force 1 January 2016; MEPC.265(68), entry into force 1 January 2017; MEPC.274(69), entry into force 1 September 2017.

²⁷⁹ Annex IV, Regulations 3–7. ²⁸⁰ Annex IV, Regulations 10–12. ²⁸¹ Annex IV, Regulation 11.

²⁸² Resolution MEPC.200(62), 15 July 2011.

²⁸³ Amendments to Annex V of MARPOL: MEPC.65(37), entry into force 1 January 1997; MEPC.89(45), entry into force 1 March 2002; MEPC.116(51), entry into force 1 August 2005; MEPC.201(62), entry into force 1 January 2013; MEPC.216(63), entry into force 1 August 2013; MEPC.246(66), entry into force 1 January 2016; MEPC.265(68), entry into force 1 January 2017; MEPC.277(70), entry into force 1 March 2018.

²⁸⁴ Exceptions are set out in Regulation 6. See also the 2012 Guidelines for the Implementation of Annex V of MARPOL 73/78 (adopted on March 2012, entered into force 1 January 2013).

²⁸⁵ Annex V, Regulation 3(1)(a). ²⁸⁶ Annex V, Regulation 3(1)(b) and (c). ²⁸⁷ Annex V, Regulation 4(1).

²⁸⁸ Annex V, Regulation 5(2)–(4). The special areas are the Mediterranean Sea, the Baltic Sea, the Black Sea, the Red Sea and the Gulf. Regulation 5(1). The North Sea area was added with effect from 18 April 1991, the Antarctic area with effect from 17 March 1992, and the Wider Caribbean region with effect from 4 April 1993.

19 May 2005, was revised in 2008,²⁸⁹ and amended subsequently.²⁹⁰ Regulations set limits on sulphur oxide (SO_x) and nitrogen oxide (NO_x) emissions from ship exhausts, prohibit deliberate emissions of ozone-depleting substances and regulate the emissions of volatile organic compounds.²⁹¹ The 2008 revision lowered the global cap of 4.5 per cent on the sulphur content of fuel oil to 3.5 per cent, with the objective of progressively reducing it to 0.5 per cent by 2020. This final reduction was subject to a feasibility review, completed in 2016, on the basis of which the MEPC agreed to implement the 2008 amendment and cap the sulphur content of marine fuels sold worldwide at 0.5 per cent by 2020. The Annex makes provision for the establishment of special 'SO_x Emission Control Areas' with more stringent standards for sulphur emissions by ships in these areas, which by 1 July 2010 were to be reduced to 1.5 per cent, and by 1 January 2015 to 1 per cent.²⁹² The Annex also prohibits the incineration on board ships of certain products, such as contaminated packaging materials and polychlorinated biphenyls (PCBs).²⁹³

With regard to greenhouse gases, according to the Third IMO Greenhouse Gas Study, in 2012 international shipping was responsible for the emission of about 2.2 per cent of the global man-made emissions of carbon dioxide.²⁹⁴ In November 2003, the IMO adopted a resolution on the matter,²⁹⁵ and the MEPC adopted in 2004 a set of guidelines on a 'CO₂ Indexing Scheme', which would allow parties to report emissions and develop a voluntary system for ship operators to use during a trial period. In July 2005, the MEPC approved 'Interim Guidelines for Voluntary Ship CO₂ Emission Indexing for Use in Trials'. The MEPC finalised in 2009 a package of specific technical and operational measures to increase efficiency and reduce emissions, which were adopted as an amendment to Annex VI on 15 July 2011.²⁹⁶ Some of the most significant measures are the Energy Efficiency Design Index (EEDI), which sets minimum energy efficiency requirements for new ships, and the Ship Energy Efficiency Management Plan (SEEMP), which provides a mechanism for monitoring ship and fleet efficiency performance over time. These measures are mandatory for all ships irrespective of flag and ownership, although a six-and-a-half-year waiver applies in respect of implementation of the measures by developing countries. The new regulations include measures on technical assistance and technology transfer to aid developing countries to improve the energy efficiency of their shipping fleets. In 2016, the MEPC agreed to develop a comprehensive IMO strategy on reduction of greenhouse gas emissions from ships, which foresees an initial emissions reduction strategy to be adopted in 2018.

²⁸⁹ Res. MEPC.175(58), 10 October 2008, in force 1 July 2010.

²⁹⁰ Amendments to Annex V of MARPOL: MEPC.190(60), entry into force 1 August 2011; MEPC.194(61), entry into force 1 February 2012; MEPC.202(62), entry into force 1 January 2013; MEPC.203(62), entry into force 1 January 2013; MEPC.217(63), entry into force 1 August 2013; MEPC.247(66), entry into force 1 January 2016; MEPC.251(66) entry into force 1 March 2015; MEPC.258(67) entry into force 1 March 2016; MEPC.271(69) entry into force 1 September 2017; MEPC.278(70) entry into force 1 March 2018.

²⁹¹ Annex VI, Regulations 12–15.

²⁹² Annex VI, Regulation 14. The Baltic Sea and the North Sea are designated as SO_x Emission Control Areas under the Protocol.

²⁹³ Annex VI, Regulation 16.

²⁹⁴ Third IMO GHG Study 2014, MEPC, October 2014. On the regulation of greenhouse gas emissions from international shipping, see further Chapter 8, pp. 331–4 and M. Reed, 'Port and Coastal State Control of Atmospheric Pollution from Merchant Vessels', 3 *San Diego Journal of Climate & Energy Law* 205 (2011–12); Y. Tanaka, 'Regulation of Greenhouse Gas Emissions from International Shipping and Jurisdiction of States', 25 *Review of European, Comparative and International Environmental Law* 333 (2016).

²⁹⁵ IMO Res. A.963(23), 'Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships', at [www.imo.org/blast/blastDataHelper.asp?data_id=26597&filename=A963\(23\).pdf](http://www.imo.org/blast/blastDataHelper.asp?data_id=26597&filename=A963(23).pdf)

²⁹⁶ Resolution MEPC.203(62), in force 1 January 2013.

Polar Code

After more than twenty years of negotiations, the International Code for Ships Operating in Polar Waters (the Polar Code) entered into force on 1 January 2017.²⁹⁷ With increased shipping activities in polar waters it became clear that new binding regulations were necessary. The Code constitutes an important development in the regulation of shipping in the Arctic and in Antarctica, but is regarded by environmentalists as falling short on several aspects, failing to cover all vessels (fishing vessels, pleasure craft and offshore drilling units are not regulated) and all sources of pollution (heavy fuel oil in the Arctic and wastewater from ships are not covered).²⁹⁸

The Polar Code builds on the voluntary IMO 'Guidelines for ships operating in polar waters',²⁹⁹ and goes beyond existing instruments, in particular MARPOL³⁰⁰ with regard to environmental protection, and SOLAS³⁰¹ on matters related to safety of life at sea. The Code has two main parts: Part I concerns safety measures, and Part II pollution prevention measures. Each Part is in turn divided into two sections, Part A which contains binding measures, and Part B which provides non-binding, additional guidance.

Part II, on prevention of marine pollution, has five chapters that regulate prevention of pollution by oil; control of pollution by noxious liquid substances in bulk; prevention of pollution by harmful substances carried by sea in packaged form; prevention of pollution by sewage from ships, and prevention of pollution by garbage from ships. The Code prohibits any discharge into the sea of oil or oily mixtures and noxious liquid substances from any ship in Arctic waters,³⁰² and strictly limits discharge of garbage into the sea, imposing special requirements additional to those of MARPOL.³⁰³ Discharges of sewage waters are prohibited in all polar territories except when performed in accordance with MARPOL and Polar Code requirements.³⁰⁴ Discharge of garbage, including food wastes and cargo residues into the sea is also restricted.³⁰⁵

The Polar Code applies to both existing and new ships, which are classified under three categories, according to ice class. 'A' class vessels are those that can endure more severe polar conditions, whereas C class vessels are prepared for more moderate conditions.³⁰⁶ All ships operating in polar waters are required to obtain a Polar Ship Certificate³⁰⁷ issued by relevant authorities, specifying A, B or C ice class of the vessel. When applying for this certificate, the vessel is to be assessed considering environmental conditions and hazards it may encounter on its polar voyage. In addition to the Polar Ship Certificate, all vessels are obliged to carry Oil Record Books, Cargo Record Books, manuals and the shipboard oil and marine pollution emergency plans on board.³⁰⁸

²⁹⁷ International Code for Ships Operating in Polar Waters (Polar Code), adopted on 94th Session of IMO's Maritime Safety Committee (MSC) in November 2014, entered into force 1 January 2017.

²⁹⁸ See e.g. D. Bognar, 'Sea-change in Polar Shipping: From Arctic to Antarctic Polar Code Initiatives', JCLoS Blog, 1 February 2017, at site.uit.no/jclos/files/2017/02/Bognar-Sea-change-in-polar-shipping-from-Arctic-to-Antarctic-Polar-Code-initiatives.pdf

²⁹⁹ Resolution A.1024(26) 'Guidelines for ships operating in polar waters', adopted by IMO Assembly in 2009.

³⁰⁰ Related amendments to MARPOL in order to make the Polar Code's environmental provisions mandatory were made by Resolution MEPC.265(68) adding Chapter 9 to Annex I of MARPOL; adopted in May 2015, entered into force 1 January 2017.

³⁰¹ The SOLAS Convention was respectively amended by Resolution MSC.386(94), which added Chapter XIV to the Convention; adopted in November 2014, entered into force 1 January 2017.

³⁰² See Part II-A, Chapter 1, Art. 1.1., pp. 1.1.1; Chapter 2, Art. 2.1., pp. 2.1.1.

³⁰³ Part II-A, Chapter 5, Art. 5.2., pp. 5.2.1. ³⁰⁴ Part II-A, Chapter 4, Art. 4.2., pp. 4.2.1.

³⁰⁵ Part II-A, Chapter 5, Art. 5.2. ³⁰⁶ Introduction, Section 2. ³⁰⁷ See Appendix 1 to the Polar Code.

³⁰⁸ Part II-A, Chapter 1, Art. 1.1., pp. 1.1.4; Chapter 2, Art. 2.1., pp. 2.1.2.

Other Agreements on Pollution from Ships

A second generation of IMO agreements controls different sources of pollution from ships: the 2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS), the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments, the 2007 Nairobi International Convention on the Removal of Wrecks, and the 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships. All these agreements are in force, except for the Hong Kong Convention.

2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS)

The objective of this convention is to prohibit the use of harmful organotins found in anti-fouling paints used on ships, and to prevent the use of any other harmful substance in anti-fouling systems in the future.³⁰⁹ The obligation to prohibit or restrict the use of these anti-fouling systems is extended not only to ships entitled to fly a state's flag, but also to those that operate under its authority and/or that enter a port, shipyard or offshore terminal of that state. It also applies to fixed and floating platforms. The treaty foresees the issuing of an 'International Anti-Fouling System Certificate' or the carrying of a 'Declaration on Anti-Fouling Systems', depending on the size of the vessel. Annex 1 to the Convention lists the anti-fouling systems that are to be prohibited or controlled.

2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments

This Convention seeks to address the problem caused by the introduction of invasive species through vessels' ballast water, which at times can be devastating, particularly to native species.³¹⁰ The Convention requires all ships to implement a 'Ballast Water and Sediments Management Plan' and to carry a 'Ballast Water Record Book', and all vessels are to be surveyed and certified and may be inspected by the port state. There are special requirements for Sediment Reception Facilities to be prepared for the reception of sediments.

2007 Nairobi International Convention on the Removal of Wrecks

This Convention provides the legal basis for states to remove shipwrecks that could constitute a hazard to navigation or adversely affect the marine environment.³¹¹ It also provides rules regarding liability of the owner of the vessel for costs incurred when removing the wreck. The Convention establishes criteria to determine whether a wreck poses a hazard to the environment, considering the depth of water above the wreck, the existence of any sensitive areas in the proximity, and whether there is a risk of oil or cargo being released into the marine environment. If the wreck is considered to constitute a hazard, it must be marked and removed by the owner.³¹² This Convention does not apply to warships or non-commercial state ships (unless the state decides otherwise) and to measures taken under the International Convention relating to

³⁰⁹ Adopted on 5 October 2001, in force 17 September 2008; seventy-four states are party. See e.g. I. Cheyne, 'Regulation of Marine Antifouling in International and EC Law', in S. Durr and J. Thomason (eds.), *Biofouling* (Oxford: Wiley-Blackwell, 2010), ch. 21.

³¹⁰ Adopted on 13 February 2004, in force 8 September 2017; fifty-four states are party. N. Effanie, 'International Law on Marine Pollution from Ballast Water', 8 *Indonesian Journal of International Law* 249 (2011).

³¹¹ Adopted 18 May 2007; in force 14 April 2015; thirty-four states are party. ³¹² Arts. 6, 8 and 9.

Intervention on the High Seas in Cases of Oil Pollution Casualties of 1969, or the Protocol relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil of 1973.³¹³

2009 International Convention for the Safe and Environmentally Sound Recycling of Ships

This Convention was developed in partnership with the International Labour Organization and the parties to the Basel Convention.³¹⁴ It aims at ensuring that when vessels reach the end of their operational lives they do not pose any unnecessary risk to human health and safety or to the environment, as they may contain hazardous substances such as asbestos, heavy metals and ozone-depleting substances. Ships to be sent for recycling will be required to carry an inventory of hazardous materials. An Appendix to the Convention lists the hazardous materials that may be prohibited or restricted in facilities in charge of recycling or scrapping. Ship recycling yards will be required to provide a 'Ship Recycling Plan'.

Safety Agreements

International standards on the safety of shipping have as their principal objective the protection of human life at sea, but in so doing also ensure the protection of material property and of the marine environment. The most significant treaty in this regard is the International Convention for the Safety of Life at Sea (SOLAS), adopted in 1974 and amended multiple times since it entered into force in 1980.³¹⁵ Other agreements have been adopted subsequently for load lines,³¹⁶ the prevention of collisions at sea,³¹⁷ the training of seafarers and fishing vessel personnel,³¹⁸ and on the safety of fishing vessels.³¹⁹ These address matters relating to safety at sea, rather than operational or accidental discharge, and have attracted broad support from states. As a body of binding rules, they establish detailed commitments on the design and construction of ships, as well as equipping, manning, operations and matters related to the training of the crew. In implementing these international agreements, the Maritime Safety Committee (MSC) of the IMO has adopted and often amended numerous standards and recommendations.

³¹³ Art. 4. ³¹⁴ Hong Kong, 15 May 2009, not in force.

³¹⁵ International Convention for the Safety of Life at Sea, London, 1 November 1974, in force 25 May 1980, 1184 UNTS 2; 163 states are party; see Protocol of 1978, London, 17 February 1978, in force 1 May 1981, UKTS 40 (1981), Cmnd 8277; Protocol of 1988, London, 11 November 1988, in force 3 February 2000.

³¹⁶ International Convention on Load Lines, as amended, London, 5 April 1966, in force 21 July 1968, 604 UKTS 133; Protocol, London, 11 November 1988, in force 3 February 2000. In this framework, in 2008 the Maritime Safety Committee adopted the International Code on Intact Stability, 2008 (2008 IS Code), which was made mandatory and entered into force in July 2010.

³¹⁷ Convention on the International Regulations for Preventing Collisions at Sea, London, 20 October 1972, in force 15 July 1977, UKTS 77 (1977), Cmnd 6962; amended in 1981, Misc. 8 (1982), Cmnd 8500, in force 1 June 1983. Further amendments were made in 1987, 1989, 1993, 2001, 2007 and 2013; 156 states are party.

³¹⁸ International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, London, 7 July 1978, in force 28 April 1984, UKTS 50 (1984), Cmnd 9266 (STCW Convention); twenty states are party. Amendments in 1995, which completely revised the Convention, entered into force on 1 February 1997. The amended Convention is reprinted in F. Wiswall (ed.), *Benedict on Admiralty* (London: LexisNexis, 1998, 7th edn), Doc. 14-6 at 14-483. The STCW Convention and the STCW Code were reviewed between 2006 and 2010. The 2010 amendments entered into force on 1 January 2012.

³¹⁹ Cape Town Agreement of 2012 on the Implementation of the Provisions of the 1993 Protocol relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, not in force.

Pollution from Seabed Activities

Pollution from seabed activities is caused by the release of harmful substances arising directly from the exploration, exploitation and processing of seabed materials.³²⁰ These activities can involve, for example, the exploitation of oil and gas reservoirs within a state's EEZ, or mining of deep-seabed resources, many of which are in areas beyond national jurisdiction. These activities have not been a major contributor to pollution of the marine environment, although, in certain regions, such as the Arabian Gulf, the proportion is considerably higher due to oil exploration activities. In April 2010, the explosion of *Deepwater Horizon*, a semi-submersible offshore oil-drilling rig in the Gulf of Mexico, manifested the dangers of these operations. Eleven people died in the accident and about 4.9 million barrels of crude oil were released over a period of three months. It is considered the largest accidental marine oil spill in the history of the petroleum industry.³²¹ Severe ecological impacts were felt as a result in the United States, and commercial and recreational fisheries were closed for several months, with some for up to a year, following the accident.³²² In addition to the impacts of occasional accidents, these activities have other environmental impacts, including chemical pollution derived from drilling, acoustic impacts on marine species from seismic surveys, or oil leakage from pipelines.³²³ Some of the international rules relevant to the exploitation of seabed resources concern the dumping of waste from offshore facilities, reviewed above.

Mining in the seabed has been an ongoing practice for several decades, aimed at extracting, for example, sand and gravel, diamonds, tin or phosphates. Such activities can have negative environmental impacts,³²⁴ but in recent years marine mining has become a matter of greater concern, particularly in the deep-seabed, given increases in exploratory and other activities. Some estimates indicate that by 2020, 5 per cent of the world's minerals, including cobalt, copper and zinc may come from the ocean floors, and this could rise to 10 per cent by 2030.³²⁵ The risks for the marine environment of deep-seabed mining, in particular, are not yet well known, but assessments indicate that removal of parts of the sea floor might result in disturbances to the benthic layer, toxic levels of contaminants in the water column and sediment plumes from tailings.³²⁶

International legislation on pollution from seabed activities is undeveloped. UNCLOS establishes a basic framework of general commitments, which have so far been supplemented by the general rules established in most regional seas agreements and by some specific regional treaties on the matter.

³²⁰ A. Nollkaemper, 'Deep Sea-Bed Mining and the Protection of the Environment', 15 *Marine Policy* 55 (1991); M. Gavouneli, *Pollution from Offshore Installations* (London: Graham & Trotman, 1995); Z. Gao (ed.), *Environment Regulation of Oil and Gas* (London: Kluwer, 1998); E. Sessa, 'Mining Exploitation and Marine Environment Protection: Reconstruction of the General Principles of Responsibility of States in Recent International Practice', *Revista Giuridica dell'Ambiente* (2012); T. Scovazzi, 'The Exploitation of Resources of the Deep Seabed and the Protection of the Environment', 57 *German Yearbook of International Law* 181 (2014).

³²¹ 'Gulf Spill Is the Largest of Its Kind, Scientists Say', *New York Times*, 2 August 2010.

³²² National Wildlife Federation, *Five Years and Counting: Gulf Wildlife in the Aftermath of the Deepwater Horizon Disaster* (2015).

³²³ United Nations World Ocean Assessment 2015, Chapter 21: Offshore Hydrocarbon Industries, 10ff. (see n. 168).

³²⁴ *Ibid.*, Chapter 23: Offshore Mining Industries, 10ff.

³²⁵ European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Blue Growth – opportunities from the marine and maritime sustainable growth. COM(2012) 494, 10.

³²⁶ GESAMP 2015, 51–2 (see n. 17).

UNCLOS and the International Seabed Authority

For seabed activities within areas of national jurisdiction, Article 208 of UNCLOS requires coastal states 'to prevent, reduce and control pollution of the marine environment arising from or in connection with seabed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction', which shall not be less effective than international rules, standards and recommended practices and procedures. States should also establish detailed global and regional rules, standards and recommended practices.³²⁷ The Arbitral Tribunal in the *Arctic Sunrise* case ruled that certain UNCLOS provisions regulating the coastal state's rights regarding marine living resources also extended to 'non-living' resources in the seabed.

The *Arctic Sunrise* case concerned the arrest of Greenpeace activists by authorities of the Russian Federation in 2013 as they protested against oil drilling in the vicinity of an offshore fixed oil platform operated by Russian state-owned Gazprom. The Netherlands, as the flag State of the *Arctic Sunrise*, requested ITLOS to grant provisional measures, which it did in November 2013, ordering the release of the vessel and all persons who had been detained.³²⁸ Subsequently, the Netherlands initiated proceedings under an Annex VII Arbitral Tribunal, which concluded with an Award on the Merits in August 2015. This ordered Russia to compensate the Netherlands for material and non-material damage resulting from the arrest of the *Arctic Sunrise* and its crew.³²⁹ The case is significant on limits to the exercise of coastal state jurisdiction against the freedom to navigate on the high seas.³³⁰

The Arbitral Tribunal considered the rights of the coastal state to enforce its laws regarding non-living resources in the EEZ. While acknowledging that UNCLOS only formulates the existence of enforcement rights in the EEZ with regard to 'living' resources – as established in Article 73 of UNCLOS³³¹ – the Tribunal concluded that 'it is clear' that a right to enforce coastal State laws in relation to non-living resources in the EEZ 'exists'. In that case, however, the Tribunal determined that measures taken by Russia against the *Arctic Sunrise* did not constitute a lawful exercise of Russia's enforcement powers.³³²

For seabed activities outside areas of national jurisdiction, UNCLOS gives the power to adopt rules, regulations and procedures for the seabed and ocean floor and subsoil beyond the limits of national jurisdiction (known as 'the Area') to the International Seabed Authority. Through its bodies, the Authority shall ensure the effective protection of the marine environment, in particular:

³²⁷ Art. 208(5).

³²⁸ ITLOS, The '*Arctic Sunrise*' Case (*Kingdom of the Netherlands v. Russian Federation*), Request for the Prescription of Provisional Measures, at www.itlos.org/fileadmin/itlos/documents/cases/case_no.22/published/C22_Order_221113.pdf

³²⁹ Permanent Court of Arbitration, Case No. 2014-02 in the Matter of the *Arctic Sunrise* Arbitration before an Arbitral Tribunal Constituted under Annex VII to the 1982 United Nations Convention on the Law of the Sea, between the Kingdom of the Netherlands and the Russian Federation, 14 August 2015, at www.pcacases.com/web/sendAttach/1438, para. 401.

³³⁰ For different perspectives on the case: A. G. Oude Elferink, 'The Russian Federation and the *Arctic Sunrise* Case: Hot Pursuit and Other Issues Under the LOSC', 92 *International Law Studies* 381 (2016); J. Harrison, 'The *Arctic Sunrise* Arbitration (*Netherlands v. Russia*)', 31 *International Journal of Marine and Coastal Law* 1, 145–59 (2016); M. C. Noto, 'The *Arctic Sunrise* Arbitration and Acts of Protest at Sea', 2 *Maritime Safety and Security Law Journal* (2016).

³³¹ Arbitral Award, paras. 279–82. See also similar argument in the *M/V 'Virginia G'* case, pp. 533, 548.

³³² Arbitral Award, para. 285. See also paras. 286ff. on enforcement jurisdiction related to the protection of the marine environment.

1. the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities; and
2. the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.³³³

The Council, which is the executive organ of the Authority, must refuse to approve areas for exploitation 'where substantial evidence indicates the risk of serious harm to the marine environment',³³⁴ and issue emergency orders to prevent serious harm to the marine environment arising out of activities in the Area.³³⁵ In 2000, the Authority began to enter into contracts with companies, research institutions and government agencies (contractors) for exploration for polymetallic nodules, sea-floor massive sulphides (SMS) and cobalt-rich ferromanganese crusts. At that time, the Authority adopted Regulations on Prospecting and Exploration of Polymetallic Nodules in the Area, which were later updated in 2013.³³⁶ In 2010 the Authority issued Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area,³³⁷ and in 2012 similar regulations for cobalt-rich crusts.³³⁸ All Regulations establish obligations for prospectors to 'take necessary measures to prevent, reduce and control pollution and other hazards to the marine environment'. These measures are to be taken 'as far as reasonably possible' and apply a precautionary approach and best environmental practices. The contractor is required to gather environmental data as exploration activities progress and to establish environmental baselines against which to assess the likely effects of its activities on the marine environment. The contractor is also required to establish and implement a programme to monitor and report on such effects.

The International Seabed Authority is preparing to issue the first licences to exploit seabed resources, and is developing management measures. It has engaged in consultations, and in 2016 published a 'working draft of the Regulations and Standard Contract Terms on Exploitation for Mineral Resources in the Area'.³³⁹ As part of this task, the Authority has also initiated the development of specific environmental regulations for exploitation in the Area.³⁴⁰ Such new rules on exploitation, together with the previously adopted rules on prospecting and exploration, will constitute a 'Mining Code'.

The environmental standards to be used in the context of exploratory activities authorised by the Authority were the object of an Advisory Opinion, in 2011, by the Seabed Disputes Chamber of ITLOS. This Opinion provided clarification on the content of the obligations of states

³³³ Art. 145. See also UNCLOS, Annex III, Art. 17(1)(b)(xii), enabling the Authority to adopt minimum standards and practices, including those relating to conservation of the resources and protection of the marine environment; and Section 1, para. 5(g) of the Annex to the 1994 Agreement on Part XI of UNCLOS (requiring the Authority to concentrate on the adoption of rules, regulations and procedures incorporating applicable standards for the protection and preservation of the marine environment).

³³⁴ Art. 162(2)(x). ³³⁵ Art. 162(2)(w). ³³⁶ ISBA/19/C/17, 22 July 2013.

³³⁷ ISBA/16/A/12/Rev.1, 15 November 2010. ³³⁸ ISBA/18/A/11, 22 October 2012.

³³⁹ Available at www.isa.org.jm/files/documents/EN/Regs/DraftExpl/Draft_ExplReg_SCT.pdf

³⁴⁰ Available at www.isa.org.jm/files/documents/EN/Regs/DraftExpl/DP-EnvRegsDraft25117.pdf

sponsoring activities in the Area, outlining their marked environmental character.³⁴¹ Unanimously, the Chamber determined that sponsoring states have a general obligation of 'due diligence', which depends on the level of risk and on the activities involved, but which is also determined by a number of 'direct obligations'.³⁴² According to the Chamber, these direct obligations included: (1) the obligation to apply a precautionary approach; (2) the obligation to apply 'best environmental practices'; (3) the obligation to adopt measures for the protection of the marine environment in the event of an emergency order; and (4) the obligation to ensure compliance by the sponsored contractor with its duty to conduct an environmental impact assessment.³⁴³

With regard to the obligation to apply the precautionary approach, the Chamber considered that this obligation was not limited to the implementation of the Nodules Regulations and the Sulphides Regulations, but that it was applicable beyond the scope of these two Regulations and should be considered an integral part of the 'due diligence' obligation.³⁴⁴ On the obligation to apply 'best environmental practices', which are expressly required only in the Sulphides Regulations, the Chamber also provided an extensive interpretation, which made this obligation applicable also under the Nodules Regulations.³⁴⁵ On the obligation to conduct an environmental impact assessment, the Chamber recognised that this was also 'a general obligation under customary law'.³⁴⁶

Regional Agreements

Nearly all regional agreements contain at least one general provision aimed at preventing, reducing and combating pollution resulting directly or indirectly from exploration and exploitation of the seabed and its subsoil (some treaties refer more broadly to the continental shelf).³⁴⁷ The regimes for the Arabian Gulf and for the Mediterranean have adopted specific protocols on the matter, namely the 1989 Kuwait Exploration Protocol, and the 1994 Madrid Offshore Protocol.

1989 Kuwait Protocol and the 1994 Madrid Protocol

Both the Kuwait and Madrid Protocols require that any installations for the exploration or exploitation of resources in the subsoil be subject to prior authorisation. Before such authorisation or licence is granted, competent authorities must assess the potential

³⁴¹ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011). The Advisory Opinion was submitted to the Seabed Disputes Chamber by the Council of the International Seabed Authority, requesting the Chamber to render an opinion on the legal responsibilities and obligations of states parties to UNCLOS with respect to the sponsorship of activities in the Area, including reference to the extent of liability of a state party and the appropriate measures to take to fulfil a sponsoring state's responsibility. See Chapter 6. See also D. Freestone, 'Advisory Opinion of the Seabed Disputes Chamber of International Tribunal for the Law of the Sea on "Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area"', 15 *ASIL Insights* 7 (2011), www.asil.org/insights/volume/15/issue/7/advisory-opinion-seabed-disputes-chamber-international-tribunal-law-sea

³⁴² The Chamber stated that these direct obligations 'may also be seen as a relevant factor in meeting the "due diligence" obligation of the sponsoring State' (para. 242(3)).

³⁴³ Para. 242. ³⁴⁴ Paras. 125–35. ³⁴⁵ Paras. 136–7.

³⁴⁶ Para. 135. On the consideration of the Chamber regarding environmental impact assessment, see Chapter 14, pp. 679–80.

³⁴⁷ 1976 Barcelona Convention, Art. 7 (as revised in 1995); 1978 Kuwait Convention, Art. IV; 1981 Abidjan Convention, Art. 6; 1982 Jeddah Convention, Art. VII; 1985 Nairobi Convention, Art. 8; 1986 Noumea Convention, Art. 8; 1986 Cartagena Convention, Art. 8; 1992 Bucharest Convention, Art. XI.

environmental effects of the operation. To this end, an environmental impact statement may – or may not – be required.³⁴⁸ The Madrid Protocol establishes that parties shall prescribe sanctions in the case of breach of obligations of the Protocol.³⁴⁹ The Protocols establish safeguard provisions to prevent accidents and require operators to have in place a ‘contingency plan’. The Kuwait Protocol sets specific requirements in this regard;³⁵⁰ the Madrid Protocol implements the provisions already established in the Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency.³⁵¹

Regulation of these activities also involves regulation of dumping from offshore installations. The Kuwait Protocol regulates the discharge of oily wastes and establishes that parties shall take ‘all practicable measures to ensure’ that the disposal of certain substances, such as plastics, garbage or sewage, is prohibited.³⁵² The Madrid Protocol clearly prohibits the discharges of certain types of sewage and of non-biodegradable garbage.³⁵³ For other discharges such as oil, oily mixtures, and drilling fluids and cuttings, the Protocol establishes the need for parties to formulate common standards of disposal.³⁵⁴ In both regimes, the use and storage of chemicals shall be subject to a ‘Chemical Use Plan’.³⁵⁵

1992 OSPAR Convention and the 1992 HELCOM Convention

In 2003, the OSPAR Commission adopted an ‘Offshore Oil and Gas Industry Strategy’. It is based on Annexes III and V of the Convention, and draws from OSPAR’s guiding principles such as the precautionary principle and the ecosystem approach. OSPAR’s Offshore Industry Committee is charged with implementing this strategy, including the development of programmes and measures and an assessment of their implementation.³⁵⁶

The 2010 North-East Atlantic Environment Strategy set specific targets regarding offshore oil and gas activities, which are mostly related to abating the dumping of polluting substances such as oil in water and chemicals.³⁵⁷ The 1992 Baltic Sea Convention contains additional measures on offshore activities. Its Annex VI requires environmental impact assessment before offshore activity can start, and includes a commitment to use best available technology and best environmental practice. It regulates discharge limits during exploration and exploitation, including a requirement of prior authorisation for some substances, and the need for each offshore unit to have a contingency plan.³⁵⁸

Environmental Emergencies

Seventeen international conventions and protocols provide a framework for international cooperation to combat emergency situations threatening the marine environment. Some of them were developed before UNCLOS, in response to individual oil pollution incidents, beginning in 1969 with the *Torrey Canyon* accident, which resulted in the escape of 117,000 tonnes of crude oil in the western approaches to the United Kingdom, causing extensive damage to the British

³⁴⁸ Kuwait Protocol, Arts. III–IV; Madrid Protocol, Arts. 4–6. ³⁴⁹ Madrid Protocol, Art. 7.

³⁵⁰ Art. VIII. See also Arts. VI–VII. ³⁵¹ Art. 16. See generally Section IV on Safeguards. ³⁵² Arts. IX and X.

³⁵³ Arts. 11 and 12. ³⁵⁴ Art. 10. ³⁵⁵ Kuwait Protocol, Art. XI; Madrid Protocol, Art. 9.

³⁵⁶ See 2003 Strategies of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic, Reference number: 2003–21; and Terms of Reference of OSPAR Committees, Reference number: 2001–4.

³⁵⁷ See n. 124, 19–21. ³⁵⁸ Annex VI, Regulations 2–5 and 7.

coast and to the coast of France.³⁵⁹ The ship was registered under the flag of Liberia and the accident occurred outside the territorial sea of the United Kingdom, raising the question of whether the coastal state could intervene to address a pollution incident occurring in areas beyond national jurisdiction. This led to the Brussels Conference of 1969 and the adoption of the 1969 Intervention Convention. Of these international instruments, three are global, including Articles 198 and 199 of UNCLOS that offer general obligations regarding notification of imminent or actual damage, and on the need for states to cooperate in eliminating the effects of pollution and developing contingency plans for responding to pollution incidents in the marine environment. Eleven instruments are regional; of the latter, eight are Protocols to UNEP Regional Seas Conventions.

1969 Intervention Convention and 1973 Intervention Protocol

The 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (1969 Intervention Convention) was adopted under the auspices of IMCO (now IMO).³⁶⁰ It allows action by coastal states in an area of the global commons without affecting the high seas freedoms or other rights and duties.³⁶¹ It allows parties to

take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences.³⁶²

Before such action is taken, unless extreme urgency requires otherwise, prior notification or consultation must take place between the coastal state and other affected states, particularly the flag state, and independent experts chosen from an IMO list.³⁶³ The measures taken by the coastal state must satisfy certain principles and conditions: they must be proportionate to the actual or threatened damage, must not go beyond what is reasonably necessary to achieve the purpose of Article I, and must cease as soon as that purpose has been achieved.³⁶⁴ A party that goes beyond what is permitted by the Convention and causes damage to others will be liable to pay compensation for such damage.³⁶⁵

The 1969 Convention was supplemented in 1973 by a Protocol on Intervention on the High Seas in Cases of Marine Pollution by Substances Other than Oil (1973 Intervention Protocol).³⁶⁶ The 1973 Protocol allows parties to take similar actions to that permitted under the 1969 Convention in relation to substances listed by the IMO and annexed to the Intervention Protocol, as well as other substances 'which are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the

³⁵⁹ Report of the Home Office, *The Torrey Canyon*, Cmnd 3246 (1967).

³⁶⁰ Brussels, 29 November 1969, in force 6 May 1975, 9 ILM 25 (1970); eighty-nine states are party.

³⁶¹ Preamble and Art. VII.

³⁶² Art. I(1). 'Maritime casualty' includes ship collisions, stranding or navigation incident or other occurrence resulting in material damage to a ship (Art. II(1)). The Convention does not apply to warships or state-owned or -operated ships on non-commercial service (Art. I(2)).

³⁶³ Arts. III and IV. ³⁶⁴ Art. V. ³⁶⁵ Art. VI.

³⁶⁶ 2 November 1973, in force 30 March 1983, UKTS 27 (1983), Cmnd 8924; fifty-seven states are party.

sea'.³⁶⁷ In the case of the latter, the party taking action will have the burden of establishing that the substance could reasonably pose a grave and imminent danger which is analogous to that posed by listed substances.³⁶⁸

1989 Salvage Convention

The 1989 International Convention on Salvage has the dual purpose of encouraging salvage and measures to protect the marine environment from the consequences of accidents.³⁶⁹ It was adopted largely as a consequence of the accident in 1978 involving the *Amoco Cadiz*, which resulted in massive pollution of the Brittany coast of France. This highlighted the inadequacy of existing instruments, in particular the 1910 Convention for the Unification of Certain Rules of Law Respecting Assistance and Salvage at Sea,³⁷⁰ and the need to provide for rules governing the remuneration of efforts by salvors to prevent or mitigate pollution. The 1989 Salvage Convention addresses this point by creating an incentive for salvors to take measures to protect the environment, even if those measures may have no useful result. The Convention also protects the legal position of coastal states with respect to pollution. Article 9 provides:

Nothing in this Convention shall affect the right of the coastal State concerned to take measures in accordance with generally recognised principles of international law to protect its coastline or related interests from pollution or the threat of pollution following upon a maritime casualty or acts relating to such a casualty which may reasonably be expected to result in major harmful consequences, including the right of the coastal State to give directions in relation to salvage operations.

The heart of the Convention is set out in Articles 12–14. Under Article 12, salvage operations entitle the salvor to a reward only if the operations have had a useful result, except as otherwise provided. Article 13 recognises that preventing environmental damage can contribute a useful result: the reward is to be fixed to encourage salvage operations and is to take into account, inter alia, 'the skill and efforts of the salvors in preventing or minimising damage to the environment'.³⁷¹ Moreover, under Article 14, if the salvor had no right to compensation under Article 13, a minimum compensation should be provided by the owner of the vessel for salvage operations for a vessel which threatened damage to the environment. This compensation may be increased by up to 30 per cent of the expenses incurred by the salvor if the salvor has prevented or minimised damage to the environment.³⁷² The salvor is also subject to a negative incentive:

³⁶⁷ Art. I(1) and (2). The IMO list annexed is subject to an amendment procedure requiring adoption with the support of two-thirds of parties to the Protocol present and voting. Arts. I(2) and II to VIII of and the Annex to the 1969 Intervention Convention apply to substances in Art. I. Amendments to the list of substances were made in 1991 (in force 30 March 1993), 1996 (in force 19 December 1997), 2002 (in force 22 June 2004) and 2007 (in force 23 November 2009).

³⁶⁸ Art. I(3).

³⁶⁹ London, 28 April 1989, in force 14 July 1996, IMO Leg/Conf.7/27, 2 May 1989; sixty-nine states are party.

³⁷⁰ Brussels, 23 September 1910, UKTS 4 (1913), Cmnd 6677; as amended by Protocol, Brussels, 27 May 1967, UNTS 22 (1978), Cmnd 7095.

³⁷¹ Art. 13(1)(b).

³⁷² Art. 14(1) and Art. 14(5). By way of incentive, the competent tribunal may increase the special compensation up to 100 per cent if it is 'fair and just' to do so and bearing in mind the criteria set out in Article 13.

negligence and the failure to prevent or minimise environmental damage may result in the salvor being deprived of the whole or part of any special compensation due.³⁷³

1990 OPRC Convention and 2000 HNS Protocol

The 1990 London International Convention on Oil Pollution Preparedness, Response and Cooperation (1990 OPRC Convention)³⁷⁴ promotes international cooperation in the event of a major oil pollution threat. Its provisions are applicable to ships, offshore units, sea ports and oil handling facilities. Even before it came into force in 1995, the Convention was being implemented by many states pursuant to the resolution of the conference that adopted it,³⁷⁵ and it has been relied upon on numerous occasions, including to help Saudi Arabia and other countries cope with a major oil spill in the Gulf in 1991.

The Preamble to the 1990 OPRC Convention includes a number of provisions of relevance to general rules of international environmental law, noting the ‘importance of precautionary measures and prevention in avoiding oil pollution in the first instance’, and taking ‘account of the “polluter-pays” principle as a general principle of international environmental law’. The Convention commits parties to take all appropriate measures in accordance with its provisions to prepare for and respond to an oil pollution incident.³⁷⁶ These measures include: oil pollution emergency plans on ships, offshore units and sea ports and oil handling facilities; oil pollution reporting procedures; and national and regional systems for preparedness and response.³⁷⁷ The Convention sets out the action to be taken on receiving an oil pollution report and provides for international cooperation in pollution response.³⁷⁸ An Annex establishes principles governing reimbursement for costs of assistance, which are without prejudice to the rights of parties to recover from third parties under other applicable provisions of national and international law.³⁷⁹

In 2000, a Protocol to the OPRC Convention was adopted to apply the same principles of the Convention to hazardous and noxious substances. The 2000 Protocol to the OPRC Convention on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (2000 HNS Protocol)³⁸⁰ established the following list of hazardous and noxious substances, defined by reference to lists of substances included in other IMO Conventions and Codes:

oils; other liquid substances defined as noxious or dangerous; liquefied gases; liquid substances with a flashpoint not exceeding 60 °C; dangerous, hazardous and harmful materials and substances carried in packaged form; and solid bulk materials defined as possessing chemical hazards.

³⁷³ Art. 14(5). ³⁷⁴ London, 30 November 1990, in force 13 May 1995, 30 ILM 735 (1991); 111 states are party.

³⁷⁵ Conf.Res.2 (Implementation Pending Entry into Force), 30 ILM 753 (1991).

³⁷⁶ Art. 1(1). ‘Oil pollution incident’ is defined as ‘an occurrence or series of occurrences having the same origin, which results or may result in a discharge of oil and which poses or may pose a threat to the marine environment, or to the coastline or related interests of one or more States, and which requires emergency action or other immediate response’ (Art. 2(2)).

³⁷⁷ Arts. 3, 4 and 6. ³⁷⁸ Arts. 5 and 7.

³⁷⁹ Annex; it also provides that ‘special attention’ shall be paid to the 1969 CLC and the 1971 Oil Pollution Fund Convention and any subsequent amendments (see also Art. 11).

³⁸⁰ London, 15 March 2000, in force 14 June 2007.

As with the 1992 Convention, the 2000 HNS Protocol seeks to provide a global framework for international cooperation in combating major pollution incidents involving hazardous and noxious substances. Parties to the 2000 HNS Protocol are required to establish measures for dealing with pollution incidents, either nationally or in cooperation with other countries. Ships will be required to carry a shipboard pollution emergency plan to deal specifically with incidents involving hazardous and noxious substances.

Regional Agreements

1969 and 1983 Bonn Agreements

The first regional agreement in this area was the 1969 Bonn Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil (1969 Bonn Agreement),³⁸¹ which established a model followed by the other agreements. Limited to pollution by oil which ‘presents a grave and imminent danger to the coast or related interests’ of one or more parties,³⁸² the Agreement required parties to share information on relevant national organisations and techniques for avoiding and dealing with oil pollution, to inform other parties without delay of a casualty or the presence of oil slicks which present a serious threat, and to require their ships and aircraft to report such casualties and oil slicks.³⁸³

In 1983, the North Sea coastal states adopted the 1983 Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (1983 Bonn Agreement), which superseded the 1969 Bonn Agreement.³⁸⁴ The 1983 Agreement extended the cooperative framework to other harmful substances and included threatened as well as actual pollution.³⁸⁵ As established in the 1969 Bonn Agreement, the 1983 treaty divided the North Sea into zones for which parties are responsible for assessing the nature, extent and movement of a spillage, keeping it under observation, and providing information to other parties.³⁸⁶ Parties are not specifically required to clean up the spillage. However, if they engage in disposal, they may seek assistance from other parties likely to be affected, in which case other parties called upon to help must ‘use their best endeavours to bring such assistance as is within their power’.³⁸⁷ The 1983 Agreement went beyond the 1969 Agreement by requiring parties to: provide surveillance of areas under their responsibility, including aerial and satellite surveillance; collectively develop and establish guidelines for joint action; provide information on pollution incidents; establish a standard form for the reporting of pollution; and provide for rules concerning the costs of action covered by the 1983 Agreement in the absence of an agreement concerning financial arrangements.³⁸⁸

UNEP Regional Seas Protocols

Ten of the UNEP Regional Seas Conventions have emergency Protocols: the 1976 Barcelona Emergency Protocol (replaced by the 2002 Prevention and Emergency Protocol); the 1978 Kuwait Emergency Protocol; the 1981 Abidjan Pollution Emergency Protocol; the 1981 Lima Emergency

³⁸¹ Bonn, 9 June 1969, in force 9 August 1969, 704 UNTS 3. See www.bonnagreement.org. See also the 1971 Agreement Between Denmark, Finland, Norway and Sweden Concerning Co-operation in Measures to Deal with Pollution of the Sea by Oil, and the 1990 Accord of Co-operation for the Protection of the Coasts and Waters of the Northeast Atlantic Against Pollution Due to Hydrocarbons or Other Harmful Substances, Lisbon, 17 October 1990, 30 ILM 1231 (1991).

³⁸² Art. 1. ³⁸³ Arts. 4 and 5.

³⁸⁴ Bonn, 13 September 1983, in force 1 September 1989, IELMT 983:68, Art. 19(2); ten states are party. ³⁸⁵ Art. 1.

³⁸⁶ Art. 6. ³⁸⁷ Art. 7. ³⁸⁸ Arts. 3(2), 4(e), 5(3) and 9–15.

Agreement (with its 1983 Quito Protocol); the 1982 Jeddah Pollution Emergency Protocol; the 1983 Cartagena Oil Spills Protocol; the 1985 Nairobi Emergency Pollution Protocol; the 1986 Noumea Pollution Emergencies Protocol; the 1992 Bucharest Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations, and the 2011 Aktau Protocol for the Caspian Sea. These include similar provisions which establish frameworks for cooperation in cases of grave and imminent danger to the marine environment, the coast or related interests, due to the presence of massive quantities of oil or other harmful substances. The Cartagena and Aktau Protocols are limited to incidents involving oil pollution.³⁸⁹ Each Protocol reflects variations on a theme which generally provides for cooperation based upon obligations: to maintain contingency plans for combating pollution; to develop and apply monitoring activities; to salvage and recover harmful substances which have been released or lost overboard; to exchange information; to coordinate the means of communication; to ensure the reporting by their ships and aircraft of specified accidents; to take certain actions (including assessment and measures to avert or reduce the effects of pollution) in the event of a threat; to call for assistance first from other parties likely to be affected; and to establish regional or subregional coordination centres.³⁹⁰

Liability and Compensation

Rules of liability and compensation for damage to the marine environment establish an incentive to prevent harm and also may require restoration. UNCLOS establishes basic rules on state responsibility and liability,³⁹¹ and several instruments have been adopted to establish rules of liability in relation to pollution or damage to the marine environment. Currently, the main instruments are: the International Convention on Civil Liability for Oil Pollution Damage (1992 CLC, as amended); the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1992 Oil Fund Convention), supplemented by the 2003 Protocol and subsequently amended; the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (1996 HNS Convention), superseded by the 2010 HNS Protocol (not yet in force); and the 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage (2001 Bunker Oil Convention). In addition, the 2007 Nairobi International Convention on the Removal of Wrecks, discussed above, clarifies responsibility for the removal of wrecks from the sea, which

³⁸⁹ 2002 Prevention and Emergency Protocol, Art. 3; 1978 Kuwait Emergency Protocol, Art. 1(2) and (5); 1981 Abidjan Pollution Emergency Protocol, Art. I(2) and (5); 1981 Lima Emergency Agreement, Arts. I and III; 1982 Jeddah Pollution Emergency Protocol, Art. I(2) and (5); 1983 Cartagena Oil Spills Protocol, Arts. I(3) and (4) and II; 1985 Nairobi Emergency Pollution Protocol, Arts. I(d)-(g) and 2; 1986 Noumea Pollution Emergencies Protocol, Arts. I(c) and (d) and 2; 1992 Bucharest Emergency Protocol, Arts. 1-2, and 2011 Aktau Protocol, Arts. 3 and 4.

³⁹⁰ 2002 Prevention and Emergency Protocol, Arts. 4-12; 1978 Kuwait Emergency Protocol, Arts. II-XII (establishing a Marine Emergency Mutual Aid Centre) and Appendix A; 1981 Abidjan Pollution Emergency Protocol, Arts. 4-10; 1981 Lima Emergency Agreement, Arts. IV-XI, and the 1983 Quito Protocol, Arts. I-III (establishing detailed cooperation mechanism for massive oil spills); 1982 Jeddah Pollution Emergency Protocol, Arts. II-XI (establishing a Marine Emergency Mutual Aid Centre); 1983 Cartagena Oil Spills Protocol, Arts. 3-9; 1985 Nairobi Emergency Pollution Protocol, Arts. 3-9; 1986 Noumea Pollution Emergencies Protocol, Arts. 3-9; 1992 Bucharest Emergency Protocol, Arts. 3-6; 2011 Aktau Protocol, Arts. 5-10.

³⁹¹ See measures on responsibility regarding activities in the Area, Art. 139; and general measures established in Art. 235 in respect of damage caused by pollution to the marine environment. See Chapter 16, pp. 779-90.

lies upon the registered owner who is required to maintain insurance or other financial security. The registered owner is not liable under this Convention if already liable under some other convention.³⁹²

The 1972 London Dumping Convention and all UNEP Regional Seas Conventions call for the development of rules on liability and compensation.³⁹³ However, to date, only limited regional rules have been adopted. The 2002 Prevention and Emergency Protocol for the Mediterranean region and the 2011 Aktau Protocol for the Caspian Sea region incorporate provisions mandating the reimbursement of pollution abatement assistance provided by a contracting party at the request of another party.³⁹⁴

CONSERVATION OF MARINE LIVING RESOURCES

Introduction

The marine living resources of the oceans and seas include bony fish, sharks and rays, cephalopods, crustaceans, and other invertebrates, such as corals. They also include birds, turtles, and marine mammals, such as cetaceans and seals.³⁹⁵ According to a ten-year survey finalised in 2010, there are, excluding microbes, about 250,000 validly described marine species together with 750,000 more species remaining to be described.³⁹⁶ Living marine resources and their associated ecosystems outside of coastal areas have been primarily affected over the last fifty years by fishing. They have also been impacted by pollution and habitat destruction, and by climate change.³⁹⁷

FAO statistics show that the annual take of fisheries from the oceans is occurring at a rate that goes far beyond sustainable levels, and that further international efforts are needed to conserve fisheries and other marine living resources. The development and use of new technologies and fishing practices (which allow fishing in areas that were previously remote and unexplored), the over-capitalisation of fishing fleets (which leads to the over-exploitation of fisheries), the continued use of destructive practices, such as bottom-trawling or dynamiting, and growing demand for fisheries resources for human consumption and animal feed, all put an increased strain on the ability of ocean resources to sustain and replenish.³⁹⁸ According to the 2016 FAO

³⁹² Nairobi, 18 May 2007, in force 14 April 2015. IMO Doc. LEG/CONF.16/19, 23 May 2007. Arts. 10–12.

³⁹³ 1972 London Dumping Convention, Art. X; 1976 Barcelona Convention, Art. 12; 1978 Kuwait Convention, Art. XIII; 1981 Abidjan Convention, Art. 15; 1981 Lima Convention, Art. 11; 1982 Jeddah Convention, Art. XIII; 1983 Cartagena de Indias Convention, Art. 14; 1985 Nairobi Convention, Art. 15; 1986 Noumea Convention, Art. 20; 1992 Bucharest Convention, Art. XVI; 2002 Antigua Convention, Art. 13.

³⁹⁴ 2002 Prevention and Emergency Protocol, Art. 13; 2011 Aktau Protocol, Art. 11.

³⁹⁵ See generally FAO FishFinder, www.fao.org/fishery/fishfinder/about/en; and the Marine Census Report 2010.

³⁹⁶ J. H. Ausubel, D. Trew Crist and P. E. Waggoner, *First Census of Marine Life 2010, Highlights of a Decade of Discovery* (2010) and *First Census of Marine Life 2010, Scientific Results to Support the Sustainable Use and Conservation of Marine Life: Summary for Policymakers* (2010), 3. See also World Register of Marine Species, www.marinespecies.org

³⁹⁷ D. Pauly and J. Alder (coord.), 'Marine Fisheries Systems', in *Ecosystems and Human Well-being: Current State and Trends*, Vol. 1, *Findings of the Condition and Trends Working Group of the Millennium Ecosystem Assessment* (2005), 480 and 490.

³⁹⁸ Scientists also observed that landings from global fisheries have shifted since the 1950s from large piscivorous fishes towards smaller invertebrates and planktivorous fishes, and conclude that this may imply major changes in the structure of marine food webs, which could lead to widespread fisheries collapses; see D. Pauly, V. Christensen,

assessment of world fisheries, in 2013 58.1 per cent of stocks were fully exploited, 31.4 overfished, and 10.5 per cent underfished.³⁹⁹ Since 1996, when world's marine fisheries reached a production peak of 86.4 million tonnes, fish captures have been decreasing steadily. The percentage of stocks fished at biologically unsustainable levels increased notably in the 1970s and 1980s, but continues today.⁴⁰⁰

Some scientists consider FAO statistics to be 'over-optimistic', and estimate higher catch rates, concluding that catch could have peaked in 1996 up to 130 million tonnes instead of 86.4 as assessed by the FAO.⁴⁰¹ FAO and most fishery management bodies build their statistics on the notion of 'maximum sustainable yield' (MSY), which is enshrined in most international instruments on fisheries management (such as UNCLOS and the 1995 Fish Stocks Agreement) and considered to provide the standard of fishing within 'biologically sustainable levels'.⁴⁰² However, the notion of MSY, originally understood as 'the greatest harvest that can be taken from a self-regenerating stock of animals year after year while still maintaining the average size of the stock',⁴⁰³ has been questioned as a valid criterion for fisheries management: it addresses species in isolation and based solely on biological criteria, and does not take into consideration other factors, particularly the ecological relationships of species with each other and with their habitat and the quality status of that habitat, among other causes.⁴⁰⁴

The main objective of international law for fisheries conservation has been to establish a framework for international cooperation towards the management and conservation of fisheries and marine living resources. Over time this framework has gradually extended the rights of coastal states, diminished the area of the high seas where there is general right for all states to fish, and developed obligations for fishing nations to manage resources jointly on the high seas. Despite the belief that the extension of the coastal states' rights would benefit conservation efforts, statistics indicate that this regime did not lead to sustainable fishing practices. Moreover, many marine living resources are migratory over medium or long distances and do not remain conveniently within the territorial jurisdiction of any single state.⁴⁰⁵ These resources are therefore 'shared' within the meaning of the 1978 draft UNEP Principles, a fact that, as in other environmental matters, calls for cooperative solutions. Four consequences of particular note flow from the common property nature of marine living resources:

J. Dalsgaard, R. Froese and F. Torres Jr, 'Fishing Down Marine Food Webs', 279 *Science* 860 (1998). See also, on the impact of overfishing, J. B. Jackson, M. X. Kirby, W. H. Berger et al., 'Historical Overfishing and the Recent Collapse of Coastal Ecosystems', 293 *Science* 629 (2001). For an earlier analysis of the threats to fisheries, not dissimilar to those currently identified, see F. W. Bell, *Food from the Sea: The Economics and Politics of Ocean Fisheries* (Boulder, CO: Westview, 1978), 339–40, cited in L. L. K. Caldwell, *International Environmental Policy* (Durham, NC/London: Duke University Press, 1990, 2nd edn), 285.

³⁹⁹ FAO, *State of World Fisheries and Aquaculture*, 38. ⁴⁰⁰ *Ibid.*

⁴⁰¹ D. Pauly and D. Zeller, 'Catch Reconstructions Reveal that Global Marine Fisheries Catches Are Higher than Reported and Declining', *Nature Communications* 7 (2016); D. Pauly, R. Watson, and J. Alder, 'Global Trends in World Fisheries: Impacts on Marine Ecosystems and Food Security', *Philosophical Transactions of the Royal Society B: Biological Sciences* 360 (2005), 5–12; Pauly and Alder, 'Marine Fisheries Systems', *Ecosystems and Human Well-being: Current State and Trends*, Vol. 1, *Findings of the Condition and Trends Working Group of the Millennium Ecosystem Assessment* (2005), 482.

⁴⁰² FAO, *State of Fisheries and Aquaculture*, 38.

⁴⁰³ C. De Klemm, in Johnson, *The Environmental Law of the Sea* (Berlin: Schmidt, 1981), 188, cited in P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), 590–1.

⁴⁰⁴ Birnie, Boyle and Redgwell, *International Law and the Environment*, 591ff.

⁴⁰⁵ See, in this regard, the decision of the WTO Appellate Body in the *Shrimp/Turtle* case, Chapter 18, pp. 859–65.

a tendency for fish stocks to be fished above biologically optimal levels; a tendency for more fishermen to engage in a fishery than is economically justified; a likelihood of competition and conflict between different groups of fishermen; and the necessity for any regulation of marine fisheries to have a substantial international component.⁴⁰⁶

The solutions offered by international law provide a framework in which to manage shared resources while balancing sovereign rights, but overall have not succeeded in reversing the drivers conducive to unsustainable fishing practices.

The 1982 UNCLOS provided a definition of the jurisdictional rights of states, establishing maritime zones, according to which different rules govern marine living resources in and beyond national territory.⁴⁰⁷ However, even before its entry into force it was apparent that UNCLOS was not providing all the necessary tools for the adequate management of marine living resources. In 1992, Agenda 21 recognised that new approaches to marine and coastal area management and development were necessary, and identified some key programme areas that required further action, including the sustainable use and conservation of marine living resources of the high seas and under national jurisdiction.⁴⁰⁸ In response, a new international agreement, implementing and developing UNCLOS measures on the conservation and management of fisheries, was adopted in 1995: the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments (1995 Fish Stocks Agreement).⁴⁰⁹

The 2002 Johannesburg Plan of Implementation provided reasonably concrete contributions in relation to fisheries, setting, inter alia, the goal to 'maintain or restore stocks to levels that can produce the maximum sustainable yield, with the aim of achieving these goals for depleted stocks where possible not later than 2015'.⁴¹⁰ This goal has not yet been achieved.

The outcome document from the 2012 Rio+20 summit recalled several of the objectives set in Johannesburg and placed significant weight to the management of marine living resources in the context of ocean management. In particular, it called upon states to: maintain or restore stocks to levels that can produce the maximum sustainable yield on an urgent basis on the basis of their biological characteristics; fully implement the Fish Stocks Agreement and other related instruments; eliminate illegal, unreported and unregulated (IUU) fishing, and ratify the FAO Agreement on Port State Measures; review the task of Regional Fishery Management Organisations to ensure better transparency and accountability in fisheries management; and eliminate subsidies that contribute to IUU fishing and overcapacity.⁴¹¹ Building on these priority objectives, two of the targets underpinning Sustainable Development Goal 14 concern fisheries. They call for states, by 2020 to: (1) effectively regulate harvesting and end overfishing, IUU fishing and destructive fishing practices to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics; and (2) prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and to IUU fishing.

⁴⁰⁶ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (Manchester: Manchester University Press, 1988, 2nd edn), 224.

⁴⁰⁷ Paras. 17.44 and 17.69. ⁴⁰⁸ Agenda 21, Chapter 17.1. ⁴⁰⁹ See pp. 516–19.

⁴¹⁰ Para. 31(a). On fisheries, see generally paras. 30 and 31. ⁴¹¹ See paras. 168–75.

The following sections discuss the development of rules of international law regarding fisheries and other marine living resources, and canvass the principal treaty instruments at the global and regional levels, as well as the significant body of case law that has emerged in this area.

Development of International Law Rules

The rules of international law relating to the sustainable use and conservation of marine living resources have a lengthy history, particularly compared to other international environmental issues. The current legal regime reflects developments in state practice and treaty law that extend back to the second half of the eighteenth century. Landmark historical developments include the 1893 award of the arbitral tribunal in the *Pacific Fur Seal* arbitration, the establishment of the FAO in 1945, the Geneva Conventions adopted by the 1958 United Nations Conference on the Law of the Sea, the 1972 Stockholm Conference on the Human Environment and the ICJ judgment in the *Fisheries Jurisdiction* case in 1974. Modern international fisheries law had its inception with the 1982 UNCLOS and subsequent treaties such as the 1995 Fish Stocks Agreement and regional agreements.

Pacific Fur Seal Arbitration

The *Pacific Fur Seal* arbitration award of 1893 is relevant today for at least three reasons:⁴¹² it reflects the inherent difficulties in the conservation of natural resources which fall, wholly or partly, outside the jurisdiction of a single state; the Regulations adopted in the award illustrate early international legal techniques for the conservation of shared natural resources; and it indicates the role of international courts and tribunals in the peaceful resolution of disputes and the progressive development of international legal arrangements.

The *Pacific Fur Seal* arbitration concerned the right of states to adopt regulations to conserve fur seals in areas beyond national jurisdiction. It arose out of a dispute between the United States and the United Kingdom following their failure (with France, Germany, Japan, Russia, Sweden and Norway) to agree on international rules to protect fur seal fisheries in the Bering Sea from indiscriminate destruction and extermination by over-exploitation.

The US had claimed jurisdiction over the Bering Sea and a right of protection and property in the fur seals found outside the ordinary three-mile territorial sea limit.⁴¹³ The US argued that property rights entitled it to preserve the fur seals from destruction, and that even if it did not have property rights it had an interest in the 'legitimate and proper use of the seal herd on its territory' which it was entitled to protect against wanton destruction. In terms not dissimilar to its position underlying the yellow-fin tuna case nearly one hundred years later, the US argued that no part of the high seas was open to individuals for the purpose of destroying national interests of such a character and importance.⁴¹⁴ The arbitrators held, by a majority of five to two, that the US had no 'right of protection or property in the fur seals

⁴¹² 15 August 1893, 1 *Moore's International Arbitration Awards*, 755. ⁴¹³ *Ibid.*, 811.

⁴¹⁴ *Ibid.*, Declaration 11. The arbitrators adopted a Supplementary Declaration, *ibid.*, 856, which recommended that the critical condition of fur seal populations required both governments to come to an understanding to prohibit any killing of fur seals for a period of two or three years, or at least one year.

frequenting the islands of the United States in the Bering Sea, when such seals are found outside the ordinary three-mile limit'.⁴¹⁵

Having rejected the US argument that the United States could apply conservation measures in areas beyond national jurisdiction, the arbitrators adopted Regulations for the protection and preservation of fur seals outside jurisdictional limits. The Regulations included elements recognisable in modern international environment law, including rules establishing closed seasons, and limiting the methods and means of hunting.⁴¹⁶

The Regulations adopted by the tribunal in the *Pacific Fur Seal* arbitration in 1893 were followed by treaties in 1911, 1942 and 1957,⁴¹⁷ which also introduced some innovative principles, including quantitative limits on the number of seals that could be taken and a commitment to transfer, by way of compensation, a number of sealskins between the various parties.

The principle of absolute freedom to fish on the high seas endorsed by the *Pacific Fur Seal* arbitration meant that coastal states did not have jurisdiction for that reason alone over the marine living resources of the high seas. Jurisdiction to prescribe legislation for the conservation of these resources and to enforce such legislation was a matter exclusively for the state which has granted to a ship the right to sail under its flag (flag state).⁴¹⁸ Today, the advent of new technologies and practices leading to over-exploitation of the marine living resources of the high seas illustrates the limitations of the principle underlying the award of the *Pacific Fur Seal* arbitration, and has caused the traditional approach to be challenged by coastal states concerned with the effects of high seas fisheries activities, and also by international legislative and judicial efforts which are seeking to place limits on traditional high seas fisheries freedoms, in particular the 1995 Fish Stocks Agreement. In this context, the *Pacific Fur Seal* arbitration award shaped the form and content of subsequent agreements to conserve marine living resources, including the International Whaling Conventions of 1931 and 1937,⁴¹⁹ and many bilateral fisheries agreements to conserve individual species or regional stocks.⁴²⁰ These were ad hoc efforts that could not effectively address the global expansion of international fisheries activities in the period after the Second World War.

Food and Agriculture Organization

The establishment of the Food and Agriculture Organization (FAO) in 1945 created a forum for the development of a more coordinated international approach to fisheries regulation at the regional and global levels. It will be recalled that the FAO was the only UN specialised agency with a mandate to promote the conservation of natural resources, and its competence over agricultural matters included fisheries and other marine products.⁴²¹ The Committee on Fisheries (COFI) has served as a focal point for the activities of the organisation, and continues to do so, with more than 190 members.⁴²² The FAO has assisted in developing and managing a number of regional fisheries agreements, and other agreements in the field of fisheries, such as the

⁴¹⁵ 8 IPE 3877. ⁴¹⁶ Regulations, Arts. 1, 2, 3, 5 and 6–8.

⁴¹⁷ Treaty for the Preservation and Protection of Fur Seals, 7 July 1911, 104 BFSP 175; Provisional Fur Seals Treaty, 156 UNTS 363; Interim Convention on the Conservation of North Pacific Fur Seals, 9 February 1957, 314 UNTS 105.

⁴¹⁸ UNCLOS, Art. 92. ⁴¹⁹ See pp. 534–6.

⁴²⁰ See e.g. Canada–United States, Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean, 2 March 1923, 32 LNTS 93; Canada–United States, Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea, 9 May 1930, 121 LNTS 209.

⁴²¹ Chapter 3, p. 73. ⁴²² On the Committee of Fisheries, see www.fao.org/fi/body/cofi/cofi.asp

1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (1993 Compliance Agreement)⁴²³ and the 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2009 Port State Measures Agreement).⁴²⁴ Some non-binding instruments developed in the framework of the FAO have had remarkable influence in guiding current policies and rules on international fisheries, such as the Code of Conduct for Responsible Fisheries. The FAO provides advice and assistance to governments and international organisations through data collection, research, and education and training.

The First UN Conference on the Law of the Sea (1958)

In 1958, the First United Nations Conference on the Law of the Sea adopted four conventions:

- The 1958 Convention on the Territorial Sea and the Contiguous Zone, which recognised the sovereignty of the coastal state and rights over living resources in the territorial sea up to twelve nautical miles from the baseline.
- The Convention on the High Seas, which recognised the freedom of the high seas for coastal and non-coastal states under the general principles of international law, including freedom of fishing. The high seas comprises all parts of the sea that are not included in the territorial sea or in the internal waters of a state.
- The 1958 Convention on the Continental Shelf, which granted sovereign rights to coastal states over the continental shelf for exploration and exploitation of the natural resources without affecting the legal status of superjacent waters as high seas.⁴²⁵
- The 1958 Convention on Fishing and Conservation of the Living Resources of the High Seas, which recognised, like the High Seas Convention, the general right of all states to engage in fishing on the high seas.⁴²⁶

The right to fish on the high seas was not, however, unlimited. The Convention on the High Seas established that the freedom of the high seas is 'to be exercised by all states with reasonable regard to the interests of other states in the exercise of the freedom', and the Convention on Fishing and Conservation of the Living Resources of the High Seas (Fisheries Convention) required states to adopt such measures for their nationals 'as may be necessary for the conservation of the living resources of the high seas', which cooperation should lead to negotiated agreements for the conservation of living resources.⁴²⁷ The Convention also recognised the special interests of coastal states in maintaining the productivity of living resources of adjacent areas of high seas, and declared that coastal states could take unilateral measures of conservation for any stock of fish or other resources in any areas of the high seas to maintain the productivity of the living resources of the sea.⁴²⁸ However, such measures could only be taken if negotiations with other states concerned had not led to a conservation agreement within six

⁴²³ See p. 519. ⁴²⁴ See p. 545.

⁴²⁵ Art. 2(1) and (3). Under Article 5(1), such exploration or exploitation 'must not result in any unjustifiable interference . . . [with] fishing or the conservation of the living resources of the sea'.

⁴²⁶ Geneva, 29 April 1958, in force 20 March 1966, 559 UNTS 285.

⁴²⁷ Arts. 1(2) and 2. The Convention defines 'conservation' as 'the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products' (Art. 2).

⁴²⁸ Arts. 6 and 7(1).

months,⁴²⁹ and limits existed on the right of recourse to unilateral measures: the need for conservation measures should be urgent, based on scientific findings, and should be non-discriminatory against foreign fishermen.⁴³⁰ In 1960, a supplementary conference failed to agree on an extension of the territorial sea beyond the traditional 3-mile limit or on the extension of certain exclusive fishing rights for coastal states beyond their territorial seas. Consequently, a number of states, including Iceland, extended their claims to exclusive fishing rights to a 12-nautical-mile limit and, in some cases, even up to a 200-nautical-mile limit.

Fisheries Jurisdiction Cases

In 1972, Iceland extended its exclusive fishing zone to fifty nautical miles, catalysing disputes with the United Kingdom and the Federal Republic of Germany over access to fishing grounds. The disputes were submitted to the ICJ, which was thus presented with an opportunity to consider, inter alia, the issue of conservation and its relationship to traditional fisheries freedoms.⁴³¹ The Court denied Iceland's right to extend its exclusive fishery zone to fifty nautical miles from the baseline, and held that Iceland could not unilaterally exclude vessels of the United Kingdom and the Federal Republic of Germany from the area within the 50-nautical-mile limit from the baseline. The Court also held, however, that, as Iceland was a state which was specially dependent on coastal fisheries, it had certain preferential fishing rights in areas beyond its territorial sea; the United Kingdom and the Federal Republic of Germany had traditional fishing rights in those areas; an 'equitable solution' required these two potentially conflicting rights to be reconciled; and, for these reasons and for 'conservation needs', neither right was 'absolute'.⁴³² Accordingly, the Court held that the states concerned had

an obligation to take full account of each other's rights and of any fishery conservation measures the necessity of which is shown to exist in those waters. It is one of the advances in maritime international law, resulting from the intensification of fishing, that the former *laissez faire* treatment of the living resources of the sea in the high seas has been replaced by a recognition of a duty to have due regard to the rights of other states and the needs of conservation for the benefits of all. Consequently, both parties have the obligation to keep under review the fishery resources in the disputed waters and to examine together, in the light of the scientific and other available information, the measures required for the conservation and development, and equitable exploitation, of those resources, taking into account any international agreement in force between them, such as the North-East Atlantic Fisheries Convention of 24 January 1959, as well as such other agreements as may be reached in the matter in the course of further negotiation.⁴³³

⁴²⁹ Art. 7(1).

⁴³⁰ Art. 7(2). Disputes, including those over unilateral measures, could go before a special commission with the power to take binding decisions (Arts. 9 and 11).

⁴³¹ *Fisheries Jurisdiction* cases (*United Kingdom v. Iceland*) (Merits) (1974) ICJ Reports 3; (*Federal Republic of Germany v. Iceland*) (Merits) (1974) ICJ Reports 175; P. Sands et al., *Basic Documents in International Environmental Law* (1995), vol. IIA, 810.

⁴³² *Fisheries Jurisdiction* cases (*United Kingdom v. Iceland*) (Merits) (1974) ICJ Reports 3 at 30-1; (*Federal Republic of Germany v. Iceland*) (Merits) (1974) ICJ Reports 174 at 198-9.

⁴³³ *Fisheries Jurisdiction* cases (*United Kingdom v. Iceland*) (Merits) (1974) ICJ Reports 3 at 31; (*Federal Republic of Germany v. Iceland*) (Merits) (1974) ICJ Reports 174 at 199.

This *dictum* from the Court recognised the duty of states to have 'due regard' to the 'needs of conservation for the benefits of all', and in effect established limits on the right of states to fish on the high seas. The decision of the Court provides a basis for the establishment of further limitations on the traditional rights of states, in respect both of fisheries and of other shared natural resources.

1972 Stockholm Conference on the Human Environment

In the period prior to and following the judgment in the *Fisheries Jurisdiction* cases, other developments were beginning to emphasise the need for international collaboration to address over-exploitation of marine living resources. The 1972 Stockholm Declaration stated a general obligation to safeguard the natural resources of the Earth for present and future generations, but its main concern with regard to the marine environment was pollution.⁴³⁴ The Action Plan for the Human Environment called on international bodies responsible for fisheries, including the FAO, to contribute to the preparations of the United Nations Conference on the Law of the Sea.⁴³⁵ The actual development of today's international regime for the conservation and management of marine living resources did not begin until the negotiations of what is now UNCLOS.

UNCLOS

The 1982 UNCLOS is the principal international legal instrument setting forth the general rights and obligations of states and other members of the international community for the conservation and sustainable use of marine living resources. Fisheries rights and obligations, including conservation, were a central issue in the negotiations. Most developing countries and some developed countries, including Australia, Canada and Norway, sought an extension of the jurisdictional rights of coastal states over fisheries; other states, including the United States, proposed a management approach which took into account the migratory characteristics of different species so that highly migratory species would be regulated by the various international fisheries commissions, and other species would be primarily subject to the jurisdiction of coastal states; states whose ships engaged in long-distance fishing, including Japan and the former Soviet Union, generally opposed any extension of coastal states' management rights which might interfere with their long-distance fishing rights.⁴³⁶ On balance, the provisions of the 1982 UNCLOS extended the rights of coastal states, principally by formalising the legal status of exclusive economic zones. The Convention also recognised the need for special rules to manage and conserve particular types of species, including highly migratory species.

UNCLOS has exerted a significant influence on the practice of states, particularly since it came into force in 1994. In respect of the provisions on the management and conservation of fisheries, it may be considered to reflect customary international law.⁴³⁷ In contrast to its approach to the regulation of the protection and preservation of the marine environment in Part XII, UNCLOS

⁴³⁴ Stockholm Declaration, Principles 2 and 7. ⁴³⁵ Recommendation 47.

⁴³⁶ Churchill and Lowe, *Law of the Sea*, 231–2.

⁴³⁷ J. Ashley Roach, 'Today's Customary International Law of the Sea', 45 *Ocean Development & International Law* 3 (2014).

does not regulate marine living resources comprehensively in a single section of the Convention. Instead, it includes provisions on the conservation and sustainable use of marine living resources in the framework of states' rights and obligations in different jurisdictional areas: in territorial waters, in archipelagic waters, on the continental shelf, in the exclusive economic zone, and on the high seas. UNCLOS also includes special rules for stocks that move across the jurisdictions of two or more states, such as highly migratory, anadromous and catadromous species, and also for marine mammals.

Territorial Waters, Archipelagic Waters and the Continental Shelf

Under UNCLOS, a coastal state has sovereignty over the 12-nautical-mile territorial sea and the marine living resources found therein.⁴³⁸ Each coastal state is free to set laws for the conservation and sustainable use of living resources subject to compliance with its international legal obligations. Each coastal state can adopt laws governing innocent passage through its territorial waters in respect of, *inter alia*, the conservation of marine living resources, the prevention of infringement of its fisheries laws, and the preservation of its environment.⁴³⁹

Archipelagic states have sovereignty over the waters within archipelagic baselines, including marine living resources found therein, and the rules of innocent passage applicable to territorial waters apply also to archipelagic waters.⁴⁴⁰ However, archipelagic states must recognise the traditional fishing rights of neighbouring states that are immediately adjacent to the archipelagic waters, for areas falling within archipelagic waters, subject to these rights being regulated by non-transferable bilateral agreements.⁴⁴¹

Coastal states continue to have exclusive sovereign rights over their continental shelf to explore and exploit natural resources.⁴⁴² These rights do not affect the legal status of superjacent waters and their exercise must not infringe or unjustifiably interfere with navigation and other rights and freedoms of other states.⁴⁴³

Exclusive Economic Zone

UNCLOS established new rules of international law for the exclusive economic zone (EEZ) of coastal states. Under Article 56(1), the coastal state has within the EEZ 'sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living'.

Subject to its right to determine the total allowable catch (TAC) of living resources in its EEZ, the coastal state must ensure through conservation and management measures that living resources are not endangered by over-exploitation, taking into account the best scientific evidence available to it.⁴⁴⁴ This requirement is clarified by the additional obligation of states to ensure that populations of harvested species are restored or maintained

⁴³⁸ Arts. 2 and 3.

⁴³⁹ Art. 21(1)(d)-(f). Fishing activities which occur in the territorial seas are inconsistent with innocent passage (Art. 19(2)(i)).

⁴⁴⁰ Arts. 49 and 52(1). ⁴⁴¹ Art. 51(1).

⁴⁴² Art. 77(1) and (2). The 'natural resources' include the sedentary species as defined in the 1958 Continental Shelf Convention, pp. 511-12.

⁴⁴³ Art. 78. See the equivalent provision in the 1958 Continental Shelf Convention, p. 511. ⁴⁴⁴ Art. 61(1) and (2).

at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing states, and taking into account fishing patterns, the interdependence of stocks, and any generally recommended international minimum standards, whether sub-regional, regional or global.⁴⁴⁵

These measures must also take into consideration the need to keep associate or dependent species above a level at which they would be seriously threatened.⁴⁴⁶ Coastal states must promote the 'optimum utilisation' of living resources and determine their capacities to harvest the living resources of their EEZ.⁴⁴⁷ They must give other states access to the surplus of the allowable catch they cannot harvest themselves, taking into account all relevant factors, including the economic needs of the coastal state, of neighbouring states, of states that have traditionally been involved in the fishery,⁴⁴⁸ and of disadvantaged states.⁴⁴⁹

Nationals of other states fishing in the EEZ must comply with the measures, laws and regulations adopted by the coastal state, including conservation laws. Coastal states must give due notice of such measures and laws.⁴⁵⁰ For stocks which occur in the EEZ of two or more coastal states, or in the EEZ and in an area beyond and adjacent to the EEZ, often referred to as 'straddling stocks', coastal states and any other state fishing those resources should seek to agree to conservation measures for those stocks.⁴⁵¹ Similarly, states fishing for highly migratory species, such as tunas, swordfish, oceanic sharks and cetaceans, are required to cooperate.⁴⁵² The need for implementation of these obligations with regard to straddling and highly migratory species resulted in the adoption of the 1995 Fish Stocks Agreement.⁴⁵³

UNCLOS also includes in relation to the EEZ rules that are applicable to marine mammals, anadromous stocks, catadromous stocks and sedentary species. Marine mammals, such as whales and seals, are subject to the provisions of Articles 65 and 120. For anadromous species (such as salmon, which spawn in freshwaters but spend most of their time in the sea), the management and conservation is primarily a matter for the states in whose rivers they originate, subject to the rule that fishing for such stocks on the high seas is prohibited unless this would result in economic dislocation for a state other than a state of origin.⁴⁵⁴ For catadromous stocks (such as eels, which spawn at sea but spend most of their time in freshwaters), management responsibilities rest with the coastal state in whose waters they spend the greater part of their life cycles, and fishing on the high seas of such stocks is prohibited.⁴⁵⁵ UNCLOS treats sedentary species as part of the natural resources of the coastal state's continental shelf.⁴⁵⁶

Article 73 of the Convention grants the coastal state the right to take such measures, including boarding, inspection, arrest and judicial proceedings, as may be necessary to ensure compliance with its laws and regulations concerning marine living resources in the EEZ. In cases of arrest or

⁴⁴⁵ Art. 61(3). For a discussion on the notion of maximum sustainable yield, see p. 507. ⁴⁴⁶ Art. 61(4).

⁴⁴⁷ Art. 62(1).

⁴⁴⁸ Art. 62(2) and (3). In practice, there would be no obligation for the coastal state to allow foreign access to its fisheries if it determines to set an allowable catch below its harvesting capacity. See W. T. Burke, *The New International Law of Fisheries* (Oxford: Clarendon Press, 1994), 63.

⁴⁴⁹ Arts. 69 and 70, on the rights of land-locked and geographically disadvantaged states. ⁴⁵⁰ Art. 62(4) and (5).

⁴⁵¹ Art. 63. ⁴⁵² Art. 64. Annex I of UNCLOS provides a list of highly migratory species. ⁴⁵³ See p. 517.

⁴⁵⁴ Art. 66. ⁴⁵⁵ Art. 67. ⁴⁵⁶ Art. 68.

detention of foreign vessels, the coastal state has the duty to promptly notify the flag state, and also to release arrested vessels and their crews promptly upon the posting of reasonable bond or other security.⁴⁵⁷ These provisions have generated a significant number of cases, discussed further below.⁴⁵⁸

High Seas

Part VII of UNCLOS establishes rules for high seas activities. Article 87 maintains the freedom of all states to fish on the high seas, subject to the limited conditions established by the Convention and by other rules of international law, and ‘with due regard for the interests of other states in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area’. Article 116 limits in three ways the right of nationals to fish on the high seas. First, treaty obligations must be complied with. Second, the rights, duties and interests of coastal states must be respected in relation to the provisions on shared stocks, highly migratory species, marine mammals, anadromous stocks and catadromous stocks (as set out in Articles 63(2) and 64–67 and supplemented by the 1995 Fish Stocks Agreement). Third, provisions concerning the conservation and management of the living resources of the high seas as set out in Articles 116–120 must be respected.

Under Article 117, states must take such measures for their nationals as may be necessary for the conservation and management of the living resources of the high seas, and under Article 118, where nationals exploit identical living resources, or different living resources in the same area of the high seas, they must enter into negotiations for the conservation and management of such resources and cooperate for the establishment of regional or subregional fisheries organisations to that end. In determining the allowable catch and in establishing other conservation measures for the high seas, Article 119 requires that measures be based on the best scientific evidence available to produce the maximum sustainable yield, as qualified by a number of environmental and economic factors, and that consideration be given to the effects on associated or dependent species. Such measures and their implementation must be non-discriminatory, in form or in fact, against fishermen of any state.⁴⁵⁹ Article 120 reiterates a general duty on states to cooperate for the conservation of marine mammals on the high seas.⁴⁶⁰

1995 Fish Stocks Agreement and Other Global Arrangements

UNCLOS provided a clear jurisdictional framework for the management of fisheries, but did not bring with it a solution to the growing pressures placed on fishery resources. In the preparations for UNCED, concern was raised about the importance of giving full effectiveness to the provisions of UNCLOS, particularly the duty of states to cooperate in the management of high seas living resources. No international agreement on the matter was reached at UNCED, but Agenda 21, in its Chapter 17, provided a roadmap which influenced some of the steps taken subsequently to articulate the obligation of states to cooperate when fishing shared resources and to engrain fundamental principles of modern fisheries management.⁴⁶¹

⁴⁵⁷ Arts. 73(4) and 73(2). ⁴⁵⁸ See p. 532. ⁴⁵⁹ Art. 119(3)(a). ⁴⁶⁰ Art. 65.

⁴⁶¹ It emphasised a ‘multi-species management and other approaches that take into account the relationships among species’ – a notion close to what is today described as the ‘ecosystem approach’ (paras. 17.45 and 17.46).

Agenda 21 identified the main problems in the management of fisheries, which more than twenty-five years later remain alarmingly contemporary:

- inadequate monitoring and enforcement of effective conservation measures;
- over-utilisation of resources;
- over-capitalisation;
- excessive fleet size;
- vessel reflagging to escape controls;
- insufficiently selective gear;
- unreliable databases; and
- lack of sufficient cooperation between states.⁴⁶²

To address these problems, Agenda 21 recommended a number of actions, most of which have been followed today. In particular, it stressed the need to enhance international cooperation, and in this context, called for states to convene an intergovernmental conference to promote the effective implementation of UNCLOS on the issue of straddling and highly migratory fish stocks.⁴⁶³

1995 Fish Stocks Agreement

The UN General Assembly convened a conference on straddling and highly migratory fish stocks in 1993, whose work was to be fully consistent with the provisions of UNCLOS.⁴⁶⁴ The UN Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995 Fish Stocks Agreement)⁴⁶⁵ was rapidly adopted on 4 August 1995 and came into force on 11 December 2001. Although it is designed to implement the relevant provisions of UNCLOS, states are not required to be a party to UNCLOS to be a party to the 1995 Fish Stocks Agreement.

The Agreement applies to the conservation and management of straddling fish stocks and highly migratory fish stocks beyond areas under national jurisdiction, except that coastal states must apply the general principles enumerated in Article 5 to stocks within areas under national jurisdiction, and Articles 6 (precautionary approach) and 7 (compatibility between measures applicable to the high seas and to areas under national jurisdiction) apply also to the conservation and management of such stocks within areas under national jurisdiction.⁴⁶⁶ No reservations are permitted.⁴⁶⁷

The Agreement introduced a new set of international obligations for the conservation of living resources, which were not present in UNCLOS and have had a marked influence in subsequently adopted agreements, including fisheries management agreements at the regional level. Under Article 5, coastal states and states fishing on the high seas commit to adopt a broad range of measures, which merit restating in full:

⁴⁶² Agenda 21, para. 17.45. ⁴⁶³ Para. 17.49(e). ⁴⁶⁴ UNGA Res. 47/192 (1992).

⁴⁶⁵ 34 ILM 1542 (1995), in force 11 December 2001; eighty-five states are party. ⁴⁶⁶ Art. 3(1) and (2). ⁴⁶⁷ Art. 42.

- (a) adopt measures to ensure long-term sustainability of straddling fish stocks and highly migratory fish stocks and promote the objective of their optimum utilization;
- (b) ensure that such measures are based on the best scientific evidence available and are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global;
- (c) apply the precautionary approach in accordance with article 6;
- (d) assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks;
- (e) adopt, where necessary, conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon the target stocks, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened;
- (f) minimise pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species (hereinafter referred to as non-target species) and impacts on associated or dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques;
- (g) protect biodiversity in the marine environment;
- (h) take measures to prevent or eliminate overfishing and excess fishing capacity and to ensure that levels of fishing effort do not exceed those commensurate with the sustainable use of fishery resources;
- (i) take into account the interests of artisanal and subsistence fishers;
- (j) collect and share, in a timely manner, complete and accurate data concerning fishing activities on, *inter alia*, vessel position, catch of target and non-target species and fishing effort, as set out in Annex I, as well as information from national and international research programmes;
- (k) promote and conduct scientific research and develop appropriate technologies in support of fishery conservation and management; and
- (l) implement and enforce conservation and management measures through effective monitoring, control and surveillance.

In applying a precautionary approach, absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures. States must establish stock-specific 'precautionary reference points', which correspond to the state of the resource and the fishery and which can be used as a guide for fisheries management. Such scientifically determined values are not to be exceeded, but, if they are, action must be taken to restore the stocks. Implementation of the precautionary approach also requires improving decision-making by obtaining and sharing the best scientific information available, and taking uncertainties into account. In addition to developing measures for target stocks, states are required to take measures to minimise the impact of fishing for such stocks on associated and dependent species and their environment.⁴⁶⁸

The 1995 Agreement envisages a significant role for subregional and regional fisheries organisations and arrangements in facilitating cooperation by states in the development and enforcement of conservation and management measures for straddling and highly migratory

⁴⁶⁸ Art. 6.

stocks.⁴⁶⁹ Where a regional fisheries organisation is competent to establish conservation and management measures for a particular stock, states fishing for those stocks are required to become members of or participants in the organisation, or agree to apply its measures, in order to be permitted to continue to fish for the stock.⁴⁷⁰ This far-reaching provision has the consequence, in effect, of departing from traditional principles reflecting absolute rights of high seas fisheries freedoms, even for those states that are not parties to regional agreements. This is precisely one of the provisions that has prevented some states from joining the Agreement.

The Agreement places primary responsibility on the flag state for ensuring compliance with conservation and management measures established by subregional or regional organisations.⁴⁷¹ However, the Agreement also recognises the role of port states in ensuring compliance,⁴⁷² and establishes innovative provisions on international cooperation in enforcement, such as regional high seas boarding and inspection schemes, which would also envisage boarding and inspecting vessels flying the flag of another state party to the Agreement, even if that state is not a member of the regional arrangement.⁴⁷³ The dispute settlement provisions of UNCLOS apply also to the 1995 Fish Stocks Agreement.⁴⁷⁴

1993 Compliance Agreement

Under UNCLOS, and as echoed by the 1995 Fish Stocks Agreement, primary responsibility for complying with measures for the conservation of living resources on the high seas lies with the flag state.⁴⁷⁵ Unfortunately not all flag states behave responsibly with respect to the vessels they flag and do not deter practices that may have a negative impact on high seas species and ecosystems. Agenda 21 noted the problem of so-called ‘flags of convenience’ and called upon states to take effective action, consistent with international law, to deter reflagging of vessels by their nationals as a means of avoiding compliance with applicable conservation and management rules for fishing activities on the high seas.⁴⁷⁶

States negotiated and adopted within the framework of the FAO the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (1993 Compliance Agreement), which did not enter into force until ten years later.⁴⁷⁷ This Agreement details, even if not in exhaustive depth, the content of flag state responsibility, which includes the general duty to take such necessary measures to ensure that vessels flying its flag do not undermine ‘the effectiveness of international conservation and management measures’. It also establishes the duty for flag states to ensure that vessels they flag are duly authorised, are included in a record of fishing vessels and that no vessel that has undermined the effectiveness of conservation and management measures, or that was previously registered with a state not party, is authorised to fish unless certain conditions are observed.⁴⁷⁸ The Agreement establishes a general obligation for states to cooperate and some basic

⁴⁶⁹ Arts. 8–10. The Agreement also provides for the conditions for new membership or participation of organisations, transparency in their activities and decision-making and strengthening of existing organisations (Arts. 11–13), as well as rules on enclosed and semi-enclosed seas and certain high seas areas (Arts. 15 and 16).

⁴⁷⁰ Art. 8(4) and Art. 17 (Part IV, ‘Non-Members and Non-Participants’). ⁴⁷¹ Arts. 18, 19 and 20(6). ⁴⁷² Art. 23.

⁴⁷³ Arts. 21 and 22. ⁴⁷⁴ Chapter 5, pp. 184–6. ⁴⁷⁵ Art. 94, UNCLOS.

⁴⁷⁶ Agenda 21, para. 17.53. See also paras. 17.51 and 17.52.

⁴⁷⁷ Approved by the FAO Conference in November 1993, FAO Res. 15/93, in force 24 April 2003; forty states are party.

⁴⁷⁸ Arts. III and IV.

information-exchange requirements, which can be supplemented voluntarily with other, more detailed information.⁴⁷⁹

Implementation is weak. The Compliance Agreement has been criticised for setting excessively broad obligations and being applicable only to fisheries on the high seas, and for permitting the exclusion of vessels of less than 24 metres. It has received few ratifications.⁴⁸⁰ In 2009, the FAO Committee on Fisheries (COFI) agreed, in the context of efforts to combating IUU fishing, to initiate a process that could provide criteria to assess flag state performance and lead to states taking action against non-compliant flag states if criteria were not met.⁴⁸¹ This process resulted in the adoption of Voluntary Guidelines for Flag State Performance, which integrate existing international measures establishing flag state obligations.⁴⁸²

1995 Code of Conduct for Responsible Fisheries

In parallel with the preparations for UNCED and the subsequent elaboration of the 1995 Fish Stocks Agreement, the FAO sponsored the elaboration of a voluntary Code of Conduct on Responsible Fisheries, which was unanimously adopted by the FAO Conference on 31 October 1995.⁴⁸³ The Code is intended to be global in scope, and is directed towards members and non-members of FAO, fishing entities, subregional, regional and global organisations, whether governmental or non-governmental, and all persons concerned with the conservation of fishery resources and the management and development of fisheries. It provides principles and standards applicable to the conservation, management and development of all fisheries, and covers the capture and processing of and trade in fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management. States have adopted further instruments, such as the International Plans of Action on seabirds,⁴⁸⁴ on sharks,⁴⁸⁵ on IUU fishing,⁴⁸⁶ and on fishing capacity,⁴⁸⁷ as well as guidelines on a wide range of issues, including by-catch, deep-sea fisheries, and flag state performance. The 1995 Code of Conduct has provided a framework for action on fisheries regulation at the FAO. In addition, its influence has been felt further afield, and many years after its adoption, such as in the agreement creating the 2009 South Pacific Regional Fisheries Management Organization (SPRFMO).⁴⁸⁸

Regional Fishery Arrangements

The establishment of regional agreements for the management of shared living resources is not a new concept. The treaties that followed the *Pacific Fur Seal* arbitration in the early 1900s are a good example of the need for states to enter into agreements to prevent the over-exploitation of renewable resources on the high seas. However, the first efforts at international cooperation in the field of fisheries focused on cooperation for research, not resource management. In 1902, the

⁴⁷⁹ Arts. V and VI. ⁴⁸⁰ As at 1 July 2011, it had been accepted by thirty-nine states and the EU.

⁴⁸¹ FAO, Report of the 28th Session of the Committee on Fisheries, 2–6 March 2009 (2009), para. 70. ⁴⁸² See p. 546.

⁴⁸³ See www.fao.org/fi/agreem/codecond/ficonde.asp

⁴⁸⁴ International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds).

⁴⁸⁵ International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks).

⁴⁸⁶ International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).

⁴⁸⁷ International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity).

⁴⁸⁸ www.sprfmo.int/assets/Basic-Documents/Convention-web.pdf

International Council for the Exploration of the Sea (ICES) was established,⁴⁸⁹ and in 1919 the International Commission for the Scientific Exploration of the Mediterranean was also set up. ICES has served as a model for international scientific bodies in other regions, and continues to be influential today in research on the marine environment and on marine living resources in the North Atlantic. The 1919 Commission for the Mediterranean was replaced in 1949 by a new international body, the General Fisheries Council for the Mediterranean, now the General Fisheries Commission for the Mediterranean.⁴⁹⁰ Since those first initiatives, international bodies concerned with the conservation and management of marine living resources continued to be established during the twentieth century and in the 2000s, gradually shifting from their initial advisory role to that of a decision-maker and enforcer.⁴⁹¹ In addition to strictly scientific and advisory bodies,⁴⁹² today there are about twenty international organisations in charge of actual management of marine living resources. The latter are known – in FAO terminology – as ‘regional fishery bodies’, or more broadly as ‘regional fishery management organisations’ (RFMOs).

UNCLOS establishes the obligation for states to cooperate in establishing the appropriate conservation and development of shared stocks ‘either directly or through appropriate sub-regional or regional organisations’.⁴⁹³ As explained above, the 1995 Fish Stocks Agreement affirms and strengthens the role of subregional and regional fisheries organisations and arrangements in respect of straddling and highly migratory fish stocks. In addition, the 1995 FAO Code of Conduct reiterates the duty of states to cooperate through fisheries management organisations or other arrangements in the conservation and management of aquatic living resources.

The first RFMOs with competence over the management of marine living resources were established in the early and mid-twentieth century, with initiatives such as the International Pacific Halibut Commission of 1923, and the General Fisheries Commission for the Mediterranean of 1949, mentioned above. However, more than half of currently existing RFMOs were set up after UNCED, mostly after the 1995 Fish Stocks Agreement. The principal regulatory commissions or organisations, in chronological order since their establishment, are listed in Table 11.2.

⁴⁸⁹ See www.ices.dk

⁴⁹⁰ Rome, 24 September 1949, in force 20 February 1952, 126 UNTS 257, amended 1963, 1976 and 1997; 23 states and the EU are party. It was further amended in 2014, entering into force in the same year; twenty states and the EU are party to the amended Agreement.

⁴⁹¹ J. Swan, *Decision-Making in Regional Fishery Bodies or Arrangements: The Evolving Role of RFBs and International Agreement on Decision-Making Processes*, FAO Fisheries Circular No. 995 (2004).

⁴⁹² See Asia-Pacific Fishery Commission (APFIC); Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO); Fishery Committee for the Eastern Central Atlantic (CECAF); Committee for Inland Fisheries and Aquaculture of Africa (CIFA); Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean (COMHAFAT); Regional Fisheries Committee for the Gulf of Guinea (COREP); Commission for Inland Fisheries of Latin America (COPECAL); Permanent Commission for the South Pacific (CPPS); Caribbean Regional Fisheries Mechanism (CRFM); European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC); Fishery Committee of the West Central Gulf of Guinea (FCWC); Forum Fisheries Agency (FFA); International Council for the Exploration of the Sea (ICES); Mekong River Commission (MRC); North Atlantic Marine Mammal Commission (NAMMCO); Latin American Organization for Fisheries Development (OLDEPESCA); North Pacific Marine Science Organization (PICES); Southeast Asian Fisheries Development Center (SEAFDEC); Secretariat of the Pacific Community (SPC); Sub-regional Fisheries Commission (SRFC); Southwest Indian Ocean Fisheries Commission (SWIOFC); Western Central Atlantic Fishery Commission (WECAFC).

⁴⁹³ Arts. 62–67 and 118.

TABLE 11.2 RFMOs

Date of establishment	Name of organisation
1923	International Pacific Halibut Commission (IPHC) ¹
1949	Inter-American Tropical Tuna Commission (IATTC) ²
1949	General Fisheries Commission for the Mediterranean (GFCM) ³
1952	North Pacific Anadromous Fish Commission (NPAFC) ⁴
1966	International Commission for the Conservation of Atlantic Tunas (ICCAT) ⁵
1978	Northwest Atlantic Fisheries Organization (NAFO) ⁶
1980	Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) ⁷
1980	North East Atlantic Fisheries Commission (NEAFC) ⁸
1982	North Atlantic Salmon Conservation Organization (NASCO) ⁹
1993	Commission for the Conservation of Southern Bluefin Tuna (CCSBT) ¹⁰
1994	Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea (CCBSP) ¹¹
1994	Lake Victoria Fisheries Organization (LVFO) ¹²
1996	Indian Ocean Tuna Commission (IOTC) ¹³
1999	Regional Commission for Fisheries (RECOFI) ¹⁴
2001	Southeast Atlantic Fisheries Organization (SEAFO) ¹⁵
2004	Western and Central Pacific Fisheries Commission (WCPFC) ¹⁶
2006	South Indian Ocean Fisheries Agreement (SIOFA) ¹⁷
2009	Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFAC) ¹⁸
2009	South Pacific Regional Fisheries Management Organization (SPRFMO) ¹⁹
2012	North Pacific Fisheries Commission (NPFC) ²⁰

1 Convention for the Preservation of the Halibut Fishery, Washington, 2 March 1923, 32 LNTS 93, amended in 1930 (121 LNTS 45) and 1937 (159 LNTS 209). The Convention was signed in Ottawa on 2 March 1953 and entered into force on 28 October 1953; the US and Canada are party. When the two countries extended their fishery jurisdictions, a Protocol amending the Convention was signed in Washington, on 29 March 1979 and entered into force on 15 October 1980. See www.iphc.int

2 Convention for the Establishment of an Inter-American Tropical Tuna Commission, Washington, 31 May 1949, in force 3 March 1950; replaced by the Convention for the Strengthening of the Inter-American Tropical Tuna Commission, in force 27 August 2010. See www.iattc.org

3 Agreement for the Establishment of the General Fisheries Commission for the Mediterranean (GFCM), approved at the Fifth Session of the FAO Conference in 1949, in force 20 February 1952, amended in 1963, 1976 and 1997. See www.gfcm.org; N. Ferri, 'Current Legal Developments: General Fisheries Commission for the Mediterranean', 24 *International Journal of Marine and Coastal Law* 163 (2009).

4 Convention for the Conservation of Anadromous Fish Stocks in the North Pacific Ocean, Moscow, 11 February 1992, in force 16 February 1993; four states are party. The 1992 Convention replaced the International Convention for the High Seas Fisheries of the North Pacific Ocean, Tokyo, 9 May 1952, in force 12 June 1953, 205 UNTS 65. See www.npafc.org; C. A. Holt, M. B. Rutherford and R. M. Peterman, 'International Cooperation Among Nation-States of the North Pacific Ocean on the Problem of Competition Among Salmon for a Common Pool of Prey Resources', 32 *Marine Policy* 607 (2008).

5 International Convention for the Conservation of Atlantic Tunas, Rio de Janeiro, 14 May 1966, in force 21 March 1969, amended in 1984 and 1992. See www.iccat.int; A. Serdy, 'Fishery Commission Quota Trading under International Law', 21 *Ocean Yearbook* 265 (2007); J. C. Levesque, 'International Fisheries Agreement: Review of the International Commission for the Conservation of Atlantic Tunas: Case Study – Shark Management', 32 *Marine Policy* 528 (2008); K. McGlade, *Regional Fisheries Management Organizations: An Examination of the International Commission for the Conservation of Atlantic Tuna as an International Fisheries Policy Instrument* (2009).

6 Convention on Future Multilateral Co-operation in the Northwest Atlantic Fisheries, Ottawa, 24 October 1978, in force 1 January 1979, 2 SMTE 60 (replacing the North-West Atlantic Fisheries Commission established in 1959). Amended in

2007. The Convention has fourteen parties. See www.nafo.int; A. B. Kirkpatrick, *Fishing for Ballots: Special Interest Politics and the Northwest Atlantic Fisheries Organization* (2011).

7 Convention on the Conservation of Antarctic Marine Living Resources, Canberra, 20 May 1980, in force 7 April 1982, 19 ILM 841 (1980). See www.ccamlr.org

8 Convention on Future Multilateral Co-operation in North-East Atlantic Fisheries, London, 18 November 1980, in force 17 March 1982, 2 SMTE 107 (replacing the North East Atlantic Fisheries Commission established in 1949). Amended in 2004 and 2006. The Convention has nine parties. See www.neafc.org; T. Bjørndal, 'Overview, Roles, and Performance of the North East Atlantic Fisheries Commission (NEAFC)', 33 *Marine Policy* 685 (2009).

9 Convention for the Conservation of Salmon in the North Atlantic Ocean, Reykjavik, 2 March 1982, in force 1 October 1983, 2 SMTE 157. The Convention has nine parties. See www.nasco.int/convention.html; North Atlantic Salmon Conservation Organization, *Ten Year Review of the Activities of the North Atlantic Salmon Conservation Organization, 1984–94* (1995).

10 Convention for the Conservation of Southern Bluefin Tuna, May 1993, in force 20 May 1994. See www.ccsbt.org; A. Cameron, 'Is There Hope for the Fish: The Post-Arbitration Effectiveness of the Convention for the Conservation of Southern Bluefin Tuna', 15 *New York University Environmental Law Journal* 247 (2007); D. Kolody, T. Polacheck, M. Basson and C. Davies, 'Salvaged Pearls: Lessons Learned from a Floundering Attempt to Develop a Management Procedure for Southern Bluefin Tuna', 94 *Fisheries Research* 339 (2008).

11 Adopted 16 June 1994, in force 8 December 1995. See www.afsc.noaa.gov/REFM/CBS/Default.htm

12 30 June 1994. See www.lvfo.org

13 Agreement for the Establishment of the Indian Ocean Tuna Commission, approved by the FAO Council in November 1993, in force March 1996. See www.iotc.org

14 Approved by the FAO Council in November 1999, in force on 26 February 2001.

15 Convention on the Conservation and Management of the Fishery Resources in the Southeast Atlantic Ocean, Windhoek, 20 April 2001, in force 13 April 2003. The 2001 Convention replaced the 1973 Convention on the Conservation of the Living Resources of the Southeast Atlantic, Rome, 23 October 1969, in force 24 October 1971, 801 UNTS 101. See www.seafo.org; D. G. M. Miller and E. J. Molenaar, 'The SEAFC Convention: A Comparative Analysis in a Developing Coastal State Perspective', 20 *Ocean Yearbook* 305 (2006).

16 Honolulu, 5 September 2000, in force 19 June 2004. See www.wcpfc.int; T. Aqorau, 'Western and Central Pacific Fisheries Commission', 24 *International Journal of Marine and Coastal Law* 737 (2009); H. Parris, 'Is the Western and Central Pacific Fisheries Commission Meeting Its Conservation and Management Objectives?', 53 *Ocean and Coastal Management* 10 (2010).

17 Rome, 7 July 2006, in force March 2011.

18 Agreement on the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission, approved by the FAO Council on 1 October 2009, in force on 3 December 2010.

19 Auckland, 14 November 2009, in force 24 August 2012. See www.southpacificrfmo.org

20 24 February 2012, in force 19 July 2015. See www.npfc.int

As may be seen, there are now a significant number of international organisations and bodies responsible for the management of shared fisheries resources. However, not all shared fisheries are yet regulated, and gaps exist for certain ocean areas (such as in the South-West Atlantic due to sovereignty disputes), and certain species (most notably for oceanic sharks, many species of which are fished as target species or as by-catch without any catch limits, or other controls).

The Arctic is under-regulated, although cooperation has intensified since 2008. Previously, there was some coverage given the competence of NEAFC over a segment of the Arctic Ocean, and also through the Norwegian Russian Fisheries Commission.⁴⁹⁴ The Arctic Council has

⁴⁹⁴ E. J. Molenaar, 'Arctic Fisheries Management', in E. J. Molenaar, A. G. Oude Elferink and D. R. Rothwell (eds.), *The Law of the Sea and the Polar Regions: Interactions Between Global and Regional Regimes* (Leiden: Martinus Nijhoff, 2013).

gradually increased its consideration of matters related to fisheries, in the context of its Protection of the Arctic Marine Environment (PAME) working group.⁴⁹⁵ In 2015, Arctic Ocean coastal states signed a non-binding declaration,⁴⁹⁶ which prevents unregulated commercial fishing in the Central Arctic Ocean.⁴⁹⁷

In addition to these fisheries organisations, other bodies regulate non-fishery resources, such as the International Whaling Commission⁴⁹⁸ and the Agreement on the Conservation of Albatrosses and Petrels (ACAP), described below.⁴⁹⁹ Special reference should be made to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), which was not established as a fishery management body, but rather as an organisation with a broader mandate to ensure the conservation of Antarctic marine living resources, including the 'rational use' of those resources.⁵⁰⁰ Because of its ecosystemic approach to conservation, CCAMLR is often regarded as the best available model of sound conservation and management of marine living resources, even if not considered strictly as an RFMO. However, CCAMLR does also control and manage the extraction of fisheries from its convention area, making decisions not dissimilar from those of RFMOs.

The mandate, scope and membership of these regional organisations differ widely. Some organisations are concerned exclusively with inland fisheries, such as the LVFO and the CACFAC, or even with fisheries in states' territorial waters, such as RECOFI.⁵⁰¹ Some RFMOs give coverage to the management of resources both in the high seas and in the EEZs of their members, but a significant number of them, namely CCBS, NAFO, NEAFC, NPAFC, NPFC, SEAFO, SIOFA and SPRFMO regulate high seas fisheries exclusively. The majority of RFMOs establish a convention area, in which the organisation applies its measures. Some of these areas are very clearly defined, although some bodies establish areas of competence that are not precisely defined and that may extend along the 'migratory range' of a species, such as salmon,⁵⁰² or may go beyond established boundaries for the purposes of scientific research.⁵⁰³ Some RFMOs focus on a single species, such as southern bluefin tuna, and are not geographically bound. This leads to overlaps with other regimes. RFMOs have tried more recently to improve their coordination and to clarify the applicable regimes for each species.⁵⁰⁴ Some RFMOs cover vast areas of the ocean, such as ICCAT and WCPFC, and have large memberships (although ICCAT, as the largest, does not exceed fifty-one members); others, such as IPHC, have no more than two members.

⁴⁹⁵ *Ibid.*, 258–9.

⁴⁹⁶ Declaration available at www.regjeringen.no/globalassets/departementene/ud/vedlegg/folkerett/declaration-on-arctic-fisheries-16-july-2015.pdf

⁴⁹⁷ E. J. Molenaar, 'International Regulation of Central Arctic Ocean Fisheries', in M. H. Nordquist, J. N. Moore and R. Long (eds.), *Challenges of the Changing Arctic: Continental Shelf, Navigation, and Fisheries* (Brill, 2016); N. Wegge, 'The Emerging Politics of the Arctic Ocean. Future Management of the Living Marine Resources', 51 *Marine Policy* 331–8 (2015).

⁴⁹⁸ See p. 534. ⁴⁹⁹ See p. 540.

⁵⁰⁰ CCAMLR Convention, Art. II(1) and (2). See further Chapter 13, pp. 635–6.

⁵⁰¹ It regulates fisheries in the area bordered by Bahrain, Iraq, Iran, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

⁵⁰² This is the case of NASCO. ⁵⁰³ See e.g. CCBS and NPAFC.

⁵⁰⁴ See e.g. the case of overlap between CCAMLR and CCSBT: A. Hemmings, 'Regime Overlap in the Southern Ocean: The Case of Southern Bluefin Tuna and CCSBT in the CCAMLR Area', 3 *New Zealand Yearbook of International Law* 1 (2006).

Overall, these organisations have evolved as a group since the establishment of the first agreements. They have reflected some of the changes in international law, which required greater scrutiny over the sustainability of their policies and practices in the face of a generalised decline in most fisheries they managed. In particular, some of the most significant changes occurred after the adoption of the 1995 Fish Stocks Agreement, in which the precautionary and ecosystem approaches penetrated a number of organisations. All RFMOs established after 1995 (the IOTC excluded) expressly recognise the need to apply the precautionary approach in achieving their objectives, and some earlier RFMOs have amended their conventions to expressly incorporate this principle.⁵⁰⁵ A number of them also refer, explicitly or implicitly, to the application of the ecosystem approach.⁵⁰⁶

These regional bodies are established by treaty and endowed with a regulatory function, which grants them power to adopt binding or non-binding conservation measures. The organisations are frequently equipped with a scientific advisory body, and with a body in charge of ensuring compliance with the conservation and management measures adopted by the RFMO. All RFMOs have a secretariat and hold annual meetings of their members, in addition to frequent intersessional technical meetings on scientific and technical matters. Some of these organisations – GFCM, IOTC and RECOFI – have been established in the framework of the FAO, under Article XIV of its Constitution.

RFMOs adopt a wide range of conservation and management measures, the majority of which are binding on their members: they determine total allowable catches, mesh and net sizes, and size limits of fish. They also prohibit certain types of fishing gear and appliances and establish closed seasons and areas. Most organisations also establish monitoring, control and surveillance requirements, which include the establishment of lists of vessels authorised to fish and/or of vessels not allowed to fish if considered to have engaged in illegal, unreported and unregulated fishing, requirements for vessels to carry a satellite-based ‘vessel monitoring system’, and for states to report on inspections and other actions. In order to exert further control over their regulated activities, some RFMOs have established ‘catch documentation schemes’, which track the source of any traded species throughout its commercialisation process. Most RFMOs support scientific research and data collection to better inform their decisions.

In recent times, and responding to the need to improve the effectiveness of their actions, some RFMOs have strengthened their cooperation with each other, making efforts to harmonise their measures and share information. Most notably, the five so-called ‘tuna RFMOs’⁵⁰⁷ initiated in 2007 a coordination process, known as the Kobe process, which has had limited practical results.⁵⁰⁸ Other examples of coordination are offered by NEAFC and NAFO, which share data and mutually recognise the lists of identified illegal vessels, which can then be used for enforcement purposes in both convention areas.

The General Assembly has requested RFMOs to undertake public and independent reviews of their performance ‘on a regular basis’.⁵⁰⁹ Since 2008, some RFMOs have assessed their

⁵⁰⁵ GFCM, IATTC, NEAFC, NPFC, RECOFI, SEAFO, SPRFMO and WCPFC. See P. de Bruyn et al., ‘The Precautionary Approach to Fisheries Management: How This Is Taken into Account by Tuna Regional Fisheries Management Organisations (RFMOs)’, 38 *Marine Policy* 397 (2013).

⁵⁰⁶ NAFO, NEAFC, NPFC, SEAFO, SPRFMO and WCPFC. ⁵⁰⁷ CCSBT, IATTC, ICCAT, IOTC and WCPFC.

⁵⁰⁸ Some results of cooperation are reflected in a joint register of fishing vessels, and the mutual recognition of vessels identified to being engaged in illegal, unreported and unregulated fishing. See www.tuna-org.org

⁵⁰⁹ See e.g. UNGA Res. 70/75, 22 February 2016, para. 151, which ‘calls upon States, through their participation in regional fisheries management organizations and arrangements, to undertake performance reviews of those regional fisheries management organizations and arrangements on a regular basis, and to make the results publicly available,

performance, concluding that there is room for improvement.⁵¹⁰ Judging by fisheries catch statistics, which continue to show significant over-exploitation even in areas where many of the commissions operate, it is clear that their achievements are, for the most part, limited. For example, of the seven principal tuna species, which are fully regulated under RFMOs, more than 40 per cent are fished at biologically unsustainable levels, and the FAO has recognised a ‘need for effective management to restore the overfished stocks’.⁵¹¹ In 2016 the United Nations Secretary General concluded that implementation of the Fish Stocks Agreement did not ‘appear to have contributed significantly to an improvement in the overall status of straddling fish stocks and highly migratory fish stocks, which has witnessed a decline’.⁵¹²

Despite past failures, fisheries commissions will continue to play a role, especially for the management of shared resources. However, it is plain that further reform is needed.⁵¹³ In 2016 the Resumed Review Conference on the Fish Stocks Agreement identified actions that states should undertake through RFMOs,⁵¹⁴ including:

- improving the collection and sharing of data;⁵¹⁵
- strengthening mechanisms to promote compliance by states;⁵¹⁶
- strengthening mandates and measures by aligning their instruments with modern approaches to fisheries conservation and management (e.g. precautionary approach), as established, for example, in the Fish Stocks Agreement;⁵¹⁷
- undertaking regular performance reviews and developing best practice guidelines;⁵¹⁸
- strengthening cooperation among RFMOs and with other bodies such as the regional seas conventions and action plans;⁵¹⁹
- integrating states that are not yet party to these regional arrangements;⁵²⁰
- improving the transparency and decision-making procedures of RFMOs;⁵²¹ and
- strengthening effective monitoring, control and surveillance measures.⁵²²

Fisheries Case Law

The implementation of the current regime for the management of marine living resources, based on UNCLOS and further developed by the 1995 Fish Stocks Agreement and by regional fishery arrangements, has also brought controversy, with some disputes being heard before international judicial bodies. The most important cases evidence ever present tensions in the regulation of fisheries: the prioritisation of conservation goals versus those that favour exploitation of the

to implement the recommendations of such reviews and to strengthen the comprehensiveness of those reviews over time, as necessary’.

⁵¹⁰ See M. Ceo et al., *Performance Reviews by Regional Fishery Bodies: Introduction, Summaries, Synthesis and Best Practices*, Volume I: CCAMLR, CCSBT, ICCAT, IOTC, NAFO, NASCO, NEAFC. FAO Fisheries and Aquaculture Circular No. 1072 (2012). See e.g. performance reviews of the RFMOs competent over tuna fisheries at www.tuna-org.org

⁵¹¹ FAO, *State of World Fisheries and Aquaculture Report*, 39.

⁵¹² Report submitted to the resumed Review Conference in accordance with paragraph 41 of General Assembly resolution 69/109 to assist it in discharging its mandate under article 36 (2) of the Agreement, UN Doc. A/CONF.210/2016/1, 1 March 2016, para. 355.

⁵¹³ A. Willock and M. Lack, *Follow the Leader: Learning from Experience and Best Practice in Regional Fisheries Management Organizations* (2006); Royal Institute of International Affairs, *Recommended Best Practices for Regional Fisheries Management Organizations* (2007).

⁵¹⁴ Resumed Review Conference Outcome, UN Doc. A/CONF.210/2016/5, 33. See paras. 12 and 13.

⁵¹⁵ *Ibid.*, para. A.13(b). ⁵¹⁶ *Ibid.*, para. A.17(b). ⁵¹⁷ *Ibid.*, para. B.1. ⁵¹⁸ *Ibid.*, para. B.2.

⁵¹⁹ *Ibid.*, para. B.3. ⁵²⁰ *Ibid.*, para. B.4. ⁵²¹ *Ibid.*, para. B.6. ⁵²² *Ibid.*, para. C.1–8.

resource; protection of the rights of the coastal state versus those of distant water fishing nations; and unilateral action versus commonly agreed rules.

Estai Case (Canada v. Spain)⁵²³

The dispute between Canada and Spain over fishing for the Greenland halibut in the high seas occurred against the background of the UN negotiations on the 1995 Fish Stocks Agreement, and may well have influenced the outcome of those negotiations. On 12 May 1994, Canada adopted legislation and implementing regulations amending the Coastal Fisheries Protection Act, which included conservation and management measures for fish stocks in the North Atlantic Fisheries Organization (NAFO) Regulatory Area, including areas beyond Canada's 200-nautical-mile zone. The regulations prescribed particular stocks, such as Greenland halibut, as being straddling stocks and subject to prescribed Canadian conservation and management measures. According to the Canadian government, the legislation and regulations were intended to enable Canada to take the urgent steps necessary to prevent further destruction of straddling fish stocks on the Grand Banks of Newfoundland, and to permit their rebuilding.

In turn, NAFO set new fishing quotas for Greenland halibut, which allocated 16,300 tonnes to Canada and 3,400 to the European Union, with the remainder being divided principally between Russia and Japan. The European Union objected to the NAFO quota and set for itself a unilateral quota in excess of the TAC that had been allocated to it by NAFO. A few days after the EU had made its objection, the Spanish fishing vessel *Estai* was boarded on the high seas and inspected by a Canadian patrol, and then charged with offences under Canada's Coastal Fisheries Protection Act, including excessive fishing for Greenland halibut in areas beyond Canada's 200-nautical-mile zone. On 28 March 1995, Spain initiated proceedings before the ICJ, asking:

- (A) that the Court declare that the Canadian legislation, in so far as it purports to exercise jurisdiction over vessels flying foreign flags on the high seas, beyond Canada's exclusive economic zone, is unopposable to the Kingdom of Spain;
- (B) that the Court adjudge and declare that Canada must refrain from repeating the actions complained of, and make due amends to the Kingdom of Spain in the form of compensation, the amount of which shall cover all damage and injury caused; and
- (C) that, consequently, the Court also declare that the boarding of the Spanish flag vessel *Estai* on the high seas on 9 March 1995, as well as the coercive measures and the exercise of jurisdiction over it and its captain, constitutes a concrete violation of the above-indicated principles and norms of international law.

As described in Chapter 5, the ICJ declined jurisdiction, on the grounds that Canada's acceptance of the Court's jurisdiction did not, following a new reservation made by Canada, encompass 'disputes arising out of or concerning conservation and management measures taken by Canada with respect to vessels fishing in the NAFO Regulatory Area'.⁵²⁴ Canada had made its reservation to acceptance of the Court's jurisdiction at the same time that it had enacted its new

⁵²³ (1998) ICJ Reports 432; L. de la Fayette, 'The Fisheries Jurisdiction Case (*Spain v. Canada*), Judgment on Jurisdiction of 4 December 1998', 48 *International and Comparative Law Quarterly* 664 (1999); A. Rey Aneiros, 'Spain, the European Union, and Canada: A New Phase in the Unstable Balance in the Northwest Atlantic Fisheries', 42 *Ocean Development and International Law* 155 (2011).

⁵²⁴ (1998) ICJ Reports 432; Chapter 5, p. 181.

fisheries conservation legislation, which allowed Canada to take enforcement action for the purpose of conserving its straddling fish stocks beyond its EEZ.⁵²⁵ Under UNCLOS, this is not permitted, with the exception of the right of hot pursuit.⁵²⁶ The Court concluded that the measures taken by Canada fell within its reservation, rejecting Spain's argument that Canada's acts were not 'conservation and management' measures. The Court considered that for a measure to be characterised as a 'conservation and management measure' it is sufficient that its purpose is to conserve and manage living resources.⁵²⁷

The view was not supported by all members of the Court, particularly those who saw the object of Canada's reservation as being 'to signal *urbi et orbi* that Canada claims special jurisdiction over the high seas', with consequences for traditional high seas fisheries freedoms.⁵²⁸

Southern Bluefin Tuna Cases (*New Zealand v. Japan, Australia v. Japan*)⁵²⁹

In July 1999, Australia and New Zealand initiated arbitration proceedings under Part XV of and Annex VII to UNCLOS, alleging that Japan had breached its obligations under Articles 64 and 116–119 of UNCLOS in relation to the conservation and management of southern bluefin tuna stock through implementation of a unilateral experimental fishing programme. The three states were parties to the 1993 Convention for the Conservation of Southern Bluefin Tuna, a regional fisheries convention established to 'ensure, through appropriate management, the conservation and optimum utilisation of southern bluefin tuna'.⁵³⁰ The Convention established a Commission for the Conservation of Southern Bluefin Tuna with power to decide upon a total allowable catch (TAC) for southern bluefin tuna and its allocation among the parties to the Convention.⁵³¹ The parties had been unable to reach agreement through the Commission on a new TAC: Japan had sought an increase in the size of the previous TAC, whereas Australia and New Zealand argued that available scientific information did not indicate that the southern bluefin tuna stock had recovered sufficiently to support a higher TAC. In 1998, Japan initiated a unilateral experimental fishing programme on the basis that this was necessary in order to gather scientific data on the state of the southern bluefin tuna stock. Australia and New Zealand objected to Japan's experimental fishing programme, claiming that its purpose was simply to allow Japan to take more than its

⁵²⁵ Canada, Coastal Fisheries Protection Act, amended May 1994, sections 5 and 7. ⁵²⁶ Art. 111.

⁵²⁷ Paras. 70–1.

⁵²⁸ Dissenting Opinion of Judge Bedjaoui (1998) ICJ Reports 519 (the conflation of the merits of the case with the Court's jurisdiction appears even more evident in Judge Bedjaoui's expression of regret 'that the Court did not reject, or even hold null and void, a reservation whose object and purpose . . . was to permit encroachment upon an essential freedom of international law, both past and present, without fear of judicial intervention' (*ibid.*, 536).

⁵²⁹ B. Kwiatkowska, Case Report, 95 *American Journal of International Law* 162 (2001); S. Marr, 'The Southern Bluefin Tuna Cases: The Precautionary Approach and Conservation and Management of Fish Resources', 11 *European Journal of International Law* 815 (2000); C. Romano, 'The Southern Bluefin Tuna Dispute: Hints of a World to Come . . . Like It or Not', 32 *Ocean Development and International Law* 313 (2001); J. Peel, 'A Paper Umbrella that Dissolves in the Rain?: The Future for Resolving Fisheries Disputes under UNCLOS in the Aftermath of the Southern Bluefin Tuna Arbitration', 1 *Melbourne Journal of International Law* 53 (2002); N. Ando, 'The Southern Bluefin Tuna Case and Dispute Settlement under the United Nations Convention on the Law of the Sea: A Japanese Perspective', in Tafsir Malick Ndiaye and R. Wolfrum (eds.), *Law of the Sea, Environmental Law and Settlement of Disputes* (Leiden: Martinus Nijhoff, 2007), 867.

⁵³⁰ Convention for the Conservation of Southern Bluefin Tuna, adopted 10 May 1993, in force 30 May 1994, 1819 UNTS 360, Art. 3.

⁵³¹ Arts. 6 and 8(3)(a).

allocated portion of the southern bluefin tuna TAC. Australia and New Zealand claimed that Japan, inter alia, had: failed to adopt necessary conservation measures so as to maintain or restore stocks to levels which could produce a maximum sustainable yield; carried out unilateral experimental fishing which would result in southern bluefin tuna being taken by Japan over and above the national allocations previously agreed under the Convention; failed to cooperate with New Zealand and Australia; and otherwise failed in its UNCLOS obligations in respect of conservation and management of southern bluefin tuna, having regard to the precautionary principle.

Two weeks after initiating the Annex VI proceedings, Australia and New Zealand requested ITLOS to prescribe provisional measures pending the decision of the arbitral tribunal to be set up in accordance with Annex VII to UNCLOS. By its Order of 27 August 1999, ITLOS ordered the three states to ensure that their annual catches did not exceed national annual allocations at the levels last agreed by the parties, and to

[r]efrain from conducting an experimental fishing programme involving the taking of a catch of southern bluefin tuna, except with the agreement of the other parties or unless the experimental catch is counted against its annual national allocation.⁵³²

Of particular note in the Order was the Tribunal's view that, in the face of scientific uncertainty as to the status of the southern bluefin tuna stock, 'the parties should . . . act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna'.⁵³³ Although ITLOS did not mention the precautionary principle by name, its Order is regarded (including by some of its members)⁵³⁴ as a case of application of the precautionary approach. The dispute showcased the frequently differing interests of nations concerning the sustainable exploitation of marine living resources and their consideration of scientific uncertainty in making their decisions. The case also evidenced some of the limitations of regional fishery arrangements, as consensus-based organisations with weak enforcement mechanisms.

The case did not proceed to the merits after the decision of the Annex VII arbitral tribunal, the following year, accepting Japan's argument that the tribunal did not have jurisdiction to receive the claims.⁵³⁵

Swordfish Case (*Chile v. EU*)⁵³⁶

During much of the 1990s, Chile and the EU were involved in a dispute concerning the conservation of declining stocks of swordfish in the South Pacific. Concerned about the state

⁵³² *Southern Bluefin Tuna cases (New Zealand v. Japan; Australia v. Japan)* (Provisional Measures), 38 ILM 1624 (1999), para. 90(c) and (d).

⁵³³ *Ibid.*, para. 77. ⁵³⁴ Separate Opinion of Judge Treves (*ibid.*, at 1645, paras. 8–9). ⁵³⁵ Chapter 5, pp. 179, 185.

⁵³⁶ M. A. Orellana, 'The Swordfish Dispute Between the EU and Chile at the ITLOS and the WTO', 71 *Nordic Journal of International Law* 55 (2002); A. Serdy, 'See You in Port: Australia and New Zealand as Third Parties in the Dispute Between Chile and the EU over Chile's Denial of Port Access to Spanish Vessels Fishing for Swordfish on the High Seas', 1 *Melbourne Journal of International Law* 79 (2002).

of stocks, in 1991 Chile implemented a number of conservation measures within its exclusive economic zone and, in relation to its own nationals, in the high seas adjacent to that zone. Thereafter, Chile prohibited the unloading in its ports (for onward transportation) of swordfish caught in waters beyond its jurisdiction. Once again, the unilateral act of a coastal state to conserve fisheries led to a dispute, which was eventually brought to two different dispute settlement procedures.

Following unsuccessful negotiations, in April 2000 the EU brought the matter to the WTO Dispute Settlement Body (DSB), claiming that Chile's prohibition was inconsistent with GATT 1994, in particular Article V (providing for freedom of transit for goods through the territory of each contracting party) and Article XI (prohibiting quantitative restrictions on imports or exports). For its part, Chile considered that its measures were covered by Article XX(g), permitting it to adopt and enforce measures relating to the conservation of natural resources in conjunction with restrictions on domestic production or consumption.⁵³⁷ In December 2000, the WTO DSB established a Panel to resolve the dispute.⁵³⁸

Thereafter, by September 2000, Chile had initiated UNCLOS Annex VII arbitration proceedings against the EU, alleging violations of various fisheries provisions of UNCLOS. The parties subsequently agreed that the dispute be submitted to a special chamber of ITLOS composed of five members.⁵³⁹ The issues put forward by Chile were inter alia:

- (a) whether the EU had complied with its obligations under the Convention, especially Arts. 116 to 119, to ensure conservation of swordfish, in the fishing activities undertaken by vessels flying the flag of any of its member states in the high seas adjacent to Chile's exclusive economic zone;
- (b) whether the EU had complied with its obligations under the Convention, in particular Art. 64, to co-operate with Chile as a coastal state for the conservation of swordfish in the high seas adjacent to Chile's exclusive economic zone;
- (c) whether the EU had challenged the sovereign right and duty of Chile, as a coastal state, to prescribe measures within its national jurisdiction for the conservation of swordfish and to ensure their implementation in its ports, in a non-discriminatory manner, as well as the measures themselves, and whether such challenge would be compatible with the Convention;
- (d) whether the obligations arising under Articles 300 and 297(1)(b) of the Convention had been fulfilled by the EU.

⁵³⁷ For discussion of the Art. XX(g) exception, see Chapter 18. Other disputes have been brought under the WTO dispute resolution mechanisms, which concerned the potential contravention of GATT rules as a result of states taking unilateral action to protect endangered marine species such as turtles, seals and dolphins. See the *Shrimp/Turtle* case, the *EC-Seal Products* case, and the successive *Tuna/Dolphin* cases discussed in Chapter 18.

⁵³⁸ Case DS193, Chile: Measures Affecting the Transit and Importation of Swordfish, WTO Press Release, 12 December 2000.

⁵³⁹ *Case Concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean (Chile - EC)*, Order 2000/3 of 20 December 2000, 40 ILM 475 (2001). The special chamber comprised Judges Chandrasekhara Rao (President), Caminos, Yankov, Wolfrum and Judge Ad Hoc Orrego Vicuña.

The issues put to ITLOS by the EU were:

- (a) whether the Chilean Decree 598 which purported to apply Chile's unilateral conservation measures relating to swordfish on the high seas was in breach of, *inter alia*, Arts. 87, 89 and 116 to 119 of the Convention;
- (b) whether the 'Galapagos Agreement' signed in Santiago de Chile on 14 August 2000 was negotiated in keeping with the provisions of the Convention and whether its substantive provisions were in consonance with, *inter alia*, Arts. 64 and 116 to 119 of the Convention;
- (c) whether Chile's actions concerning the conservation of swordfish were in conformity with Art. 300 of the Convention and whether Chile and the European Union remained under a duty to negotiate an agreement on co-operation under Art. 64 of the Convention; and
- (d) whether the jurisdiction of the special chamber extended to the issue referred to in paragraph (c) above.

In January 2001, the EU and Chile agreed to suspend (but not terminate) the WTO and ITLOS proceedings,⁵⁴⁰ to resume bilateral cooperation, and to put in place a provisional arrangement. The provisional arrangement comprised three elements: a resumption of meetings within the framework of the Bilateral Scientific and Technical Commission on Swordfish Stocks in the South-East Pacific; access for a limited number of EU vessels to Chilean ports, permitting transshipment or landing of up to 1,000 tonnes of swordfish under a joint programme to assist in the scientific evaluation of swordfish stocks; and a commitment to agree on a multilateral framework for the conservation and management of swordfish in the Southeast Pacific, with a diplomatic conference to be held in 2002. Between 2001 and 2008, the proceedings remained suspended.⁵⁴¹ On 16 December 2009, the Special Chamber, after considering the request of the parties to discontinue the case, ordered that the case be removed from the list of cases. The case ended as a result of the parties having reached an 'Understanding' on 16 October 2008, which provided a 'definitive commitment to cooperate for the long-term conservation and management of swordfish stocks in the South Eastern Pacific'. The Understanding involved an agreement freezing the fishing effort by the parties at 2008 levels (or at the maximum historical peak); allowing EU vessels fishing for swordfish in the high seas in accordance with the new Understanding to be granted access to designated Chilean ports; and establishing a Bilateral Scientific and Technical Committee (BSTC), also responsible for advising the parties on the adoption of further conservation measures if needed.⁵⁴² However, although this Understanding was mutually agreed and initialled in 2008, the agreement has never been signed. The EU and Chile are engaged in further negotiations, and the EU considers that swordfish is under the purview of IATTC, to which Chile is not a party.⁵⁴³

South China Sea Arbitration (*Philippines v. China*)⁵⁴⁴

The 2016 Award on the South China Sea Arbitration considered multiple matters, including issues of maritime rights and entitlements. A part of the dispute concerned the exercise of the

⁵⁴⁰ See ITLOS Order, 15 March 2001, www.itlos.org/case_documents/2001/document_en_99.pdf

⁵⁴¹ See ITLOS Order 2003/2 of 16 December 2003; Order 2005/1 of 29 December 2005; Order 2007/3 of 30 November 2007; and Order 2008/1 of 11 December 2008.

⁵⁴² Order 2009/1 of 16 December 2009.

⁵⁴³ European Commission, at madb.europa.eu/madb/barriers_details.htm?barrier_id=12120

⁵⁴⁴ *The South China Sea Arbitration (The Republic of Philippines v. The People's Republic of China)*, Permanent Court of Arbitration, Case Num. 2013–19, Award 12 July 2016. See S-M. Kao, 'International Practices on the Management of

Philippines' fishing rights, which the Philippines considered to have been breached due to China's tolerance of its vessels fishing without authorisation in the Philippines' EEZ.

After providing a careful review of applicable international law on the rights and duties of coastal and flag states regarding the exploitation of marine living resources,⁵⁴⁵ and noting that UNCLOS also 'imposes an obligation directly on *private* parties' in licensing and other fisheries access procedures,⁵⁴⁶ the Tribunal considered whether China had paid due regard to the coastal state rights and duties of the Philippines. The Arbitral Tribunal recalled the *Chagos Marine Protected Area Arbitration*, and the *Fisheries Advisory Opinion* of ITLOS, and concluded that China had an obligation of 'due diligence' over its fleet. By 'tolerating' fishing activities by its vessels within the EEZ of the Philippines, China had breached Article 58(3) of the Convention.⁵⁴⁷ The Tribunal ruled:

Given the importance of fisheries to the entire concept of the exclusive economic zone, the degree to which the Convention subordinates fishing within the exclusive economic zone to the control of the coastal State, and the obligations expressly placed on the nationals of other States by Article 62(4) of the Convention, the Tribunal considers that anything less than due diligence by a State in preventing its nationals from unlawfully fishing in the exclusive economic zone of another would fall short of the regard due pursuant to Article 58(3) of the Convention.⁵⁴⁸

Prompt Release Cases

A number of cases have been brought before ITLOS seeking compliance with the 'prompt release' provisions established by UNCLOS Articles 73 and 292, whereby the coastal state is required to release promptly, upon payment of a bond or other security, any vessel it has detained for the purpose of ensuring compliance with its own laws and regulations concerning living resources (and also non-living resources as clarified by the Arbitral Tribunal in the *Arctic Sunrise* case).⁵⁴⁹ The first 'prompt release' case decided by ITLOS, in 1997, concerned a request for the prompt release of an oil tanker engaged in supplying fuel oil to fishing and other vessels. Since then, ITLOS has considered eight cases in which fishing vessels (including support vessels) were engaged in illegal activities in EEZs and had been arrested by the coastal states concerned.⁵⁵⁰ ITLOS found that it had jurisdiction in five of those cases and ordered the prompt release of the respective vessels, determining the bond or security to be placed for their release. In some cases,

Fishery Resources: Lessons Learnt for the South China Sea', 18 *Journal of International Wildlife Law and Policy* 165 (2015).

⁵⁴⁵ *South China Sea Arbitration*, p. 531, paras. 735ff. ⁵⁴⁶ *Ibid.*, para. 740. ⁵⁴⁷ *Ibid.*, paras. 742–4.

⁵⁴⁸ *Ibid.*, para. 744.

⁵⁴⁹ Prompt release cases can also be brought under Articles 220 and 226 of UNCLOS concerning matters related to the preservation of the marine environment.

⁵⁵⁰ Case No. 1: The *M/V "SAIGA" Case* (*Saint Vincent and the Grenadines v. Guinea*), Prompt Release, 4 December 1997; Case No. 5: The '*Camouco*' case (*Panama v. France*), Prompt Release, 17 January 2000; Case No. 6: The '*Monte Confurco*' case (*Seychelles v. France*), Prompt Release, 18 November 2000; Case No. 8: The '*Grand Prince*' case (*Belize v. France*), Prompt Release, 20 April 2001; Case No. 9: The '*Chaisiri Reefer 2*' case (*Panama v. Yemen*), Prompt Release; Case No. 11: The '*Volga*' case (*Russian Federation v. Australia*), Prompt Release, 23 December 2002; Case No. 13: The '*Juno Trader*' case (*Saint Vincent and the Grenadines v. Guinea-Bissau*), Prompt Release, 18 December 2004; Case No. 14: The '*Hoshinmaru*' case (*Japan v. Russian Federation*), Prompt Release, 6 August 2004; Case No. 15: The '*Tomimaru*' case (*Japan v. Russian Federation*), Prompt Release, 6 August 2007.

discussion arose around the gravity of engaging in illegal fishing and how the Tribunal should determine the amount of the security imposed. In general, ITLOS has refrained from undertaking any express consideration of the gravity of illegal fishing, but in the *Volga* case it noted that it ‘understands the international concerns about illegal, unregulated and unreported fishing’ and accepted the ‘gravity’ of the infraction according to the domestic legislation of the coastal state (Australia), fixing the bond requested by this country.⁵⁵¹

On April 2014, ITLOS issued a ruling on the *M/V Virginia G* case, which considered aspects related to the prompt release obligations of coastal states, albeit not brought under the special procedure of Article 292. The case concerned the arrest by Guinea Bissau of the Panamanian flagged tanker *M/V Virginia G*, which was found to be supplying fuel to Spanish fishing vessels within Guinea Bissau’s EEZ without a bunkering licence. This case is discussed further below, as it has broader implications concerning coastal states’ rights to conserve and manage living resources in the EEZ, including enforcement action under Article 73 of UNCLOS.⁵⁵²

Marine Mammals

The conservation of marine mammals (cetaceans, pinnipeds, sirenians, and mustelids), which comprise 130 or more species including whales, dolphins and seals, is an issue which has received widespread public attention since 1972, when a proposal was put forward at the Stockholm Conference to establish a total moratorium on commercial whaling.⁵⁵³ Since then, the whale has emerged as a symbol of the world environmental movement and has come to represent, perhaps better than any other single issue, the difficulty of reconciling the need to conserve biological diversity, protect cultural and indigenous values, and give effect to economic needs. Forty years after Stockholm, the issue remains controversial, as shown by the case filed by Australia against Japan in 2010 challenging the legality of Japan’s ‘scientific whaling’ programme.⁵⁵⁴

Whale species have been hunted on a large scale since the eighteenth and nineteenth centuries for lamp oil, for perfume ingredients, and for the whalebones used in corset stays.⁵⁵⁵ In the second half of the nineteenth century, new technological developments, such as cannon-fired harpoons, allowed whalers to catch the faster species, such as blue, fin, sei, Bryde’s and minke whales. By 1988, the grey whale was extinct in the Atlantic, and has been nearly extinct in the western North Pacific; the humpback, bowhead and black right whales were categorised as endangered; and the population of the blue whale, estimated at between 166,000 and 226,400 in pre-whaling times, had dropped to between 7,500 and 15,000 worldwide.⁵⁵⁶ Other members of the cetacean family include dolphins, which are not generally endangered but have been adversely affected by modern fishing practices, such as driftnet fishing, in a way that has

⁵⁵¹ *Volga* case, paras. 68–73. See also the Dissenting Opinion of Judge Anderson in the *Camouco* case (*Panama v. France*), Judgment of 7 February 2000, 39 ILM 666 (2000) (‘Article 292 aims to protect certain economic and humanitarian values: ships and crews should be released from detention upon posting “reasonable” security pending trial on fishery or pollution charges. At the same time, Part V of the Convention protects other values, including the conservation of the living resources of the sea and the effective enforcement of national fisheries laws and regulations. In my opinion, greater significance should have been accorded to these latter values in deciding the question of the reasonableness of the security in this case’). See T. A. Mensah, ‘The Tribunal and the Prompt Release of Vessels’, 22 *International Journal of Marine and Coastal Law* 425 (2007).

⁵⁵² See p. 548. ⁵⁵³ Chapter 2, p. 31. ⁵⁵⁴ *Whaling* case, pp. 536–8.

⁵⁵⁵ World Resources Institute, *World Resources (1988–9)*, 155. ⁵⁵⁶ *Ibid.*, 156, table 9.4.

attracted widespread criticism because of the high rate of incidental taking of dolphins. Pinnipeds were greatly reduced in abundance from the eighteenth to the twentieth centuries. Some species such as the Caribbean monk seal and the Japanese sea lion were driven to extinction; others, such as the Mediterranean monk seal, were reduced to very low numbers.⁵⁵⁷ Although intensity of exploitation of these species has declined in recent decades, many continue to be threatened, as a result of hunting, the deterioration of marine habitats, or fishing activities which result in their death through entanglement or otherwise.⁵⁵⁸

Marine mammals are subject to the general rules established by UNCLOS governing the conservation of marine living resources as well as the special provisions of Article 65 of UNCLOS, which provides that nothing in the provisions relating to the exclusive economic zone

restricts the right of a coastal state or the competence of an international organisation, as appropriate, to prohibit, limit or regulate the exploitation of marine mammals more strictly than provided for in [the provisions of UNCLOS on the EEZ]. States shall co-operate with a view to the conservation of marine mammals and in the case of cetaceans shall in particular work through the appropriate international organisations for their conservation, management and study.

This provision applies to the conservation and management of marine mammals in the high seas.⁵⁵⁹ Marine mammals are protected by other treaties, including those that establish general rules, the 1973 CITES⁵⁶⁰ and 1979 Bonn Convention on migratory species.⁵⁶¹ Four agreements are in place which specifically address cetaceans: the 1946 International Convention for the Regulation of Whaling (1946 International Whaling Convention); the 1992 Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (1992 ASCOBANS); the 1992 Agreement Establishing the North Atlantic Marine Mammals Conservation Organization (1992 NAMMCO); and the 1996 Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (1996 ACCOBAMS).

International Whaling Commission

The International Whaling Commission (IWC) was established by the 1946 International Whaling Convention,⁵⁶² which replaced a 1937 agreement.⁵⁶³ It currently has eighty-eight-member governments. The 1946 Convention began as a whaling club, established 'to provide for the proper conservation of whale stocks and thus make possible the orderly development of the

⁵⁵⁷ United Nations World Ocean Assessment, Chapter 37, Marine Mammals (2016), 4.

⁵⁵⁸ *Ibid.*, 1. See also L. L. Nordtvedt Reeve, 'Of Whales and Ships: Impacts on the Great Whales of Underwater Noise Pollution from Commercial Shipping and Proposals for Regulation under International Law', 18 *Ocean and Coastal Law Journal* 127 (2012).

⁵⁵⁹ UNCLOS, Art. 120.

⁵⁶⁰ By 1983, Appendix I to CITES listed the following whales: sperm, fin, sei, blue, humpback, bowhead, right, Bryde's, grey and bottlenose, as well as several dolphin types, and all cetaceans not listed in Appendix I or II. See Chapter 10, pp. 409–16.

⁵⁶¹ See further Chapter 10, pp. 417–20.

⁵⁶² Washington, 2 December 1946, in force 10 November 1948, 161 UNTS 72; the Convention has been subject to one amending Protocol (19 November 1956, 338 UNTS 366), but is usually subject to an annual amendment of its Schedule.

⁵⁶³ 8 June 1937, 190 LNTS 79, and amending Protocol (24 June 1938, 196 LNTS 131); the 1937 Convention itself superseded the 1931 Convention for the Regulation of Whaling, Geneva, 24 September 1931, 55 LNTS 349.

whaling industry', while taking into account the need to safeguard whale resources from over-fishing and to achieve optimum levels of whale stocks without causing widespread economic and nutritional distress in the context of an international system of regulation.⁵⁶⁴ The Convention, which includes a Schedule establishing the detailed regulations and obligations under the Convention, applies to factory ships, land stations and whale catchers and 'to all waters in which whaling is prosecuted'.⁵⁶⁵ The Convention does not, however, define what is meant by a 'whale' and this has led to differences of view as to whether the IWC has competence over dolphins and porpoises, which are all cetaceans and therefore members of the same taxonomic family as whales. The IWC has, however, exercised competence over small cetaceans in the past. For example, in 1980 it adopted a resolution recommending that the Scientific Committee, in part through the Sub-Committee on Small Cetaceans, continue to consider the status of small cetaceans.⁵⁶⁶

The IWC is the principal institutional organ established by the Convention, and is assisted by a secretariat.⁵⁶⁷ The IWC's functions include studies and investigations, collecting and analysing statistical information and methods of maintaining and increasing populations of whale stocks. More specifically, it has the power under Article V(1) to amend the provisions of the Schedule by adopting 'regulations' for the conservation and utilisation of whale resources, and under Article VI it may make 'recommendations' (which are not binding) on any matter relating to whales or whaling. The powers of the IWC under Article V(1) allow it to take binding decisions on the regulation of whaling, including prohibitions on species, seasons and waters and the establishment of technical requirements.⁵⁶⁸

There are a number of exceptions to the specific obligations established under the Convention and in the Schedule. The main one is scientific: parties may grant a special permit authorising a national to kill, take or treat whales 'for the purposes of scientific research subject to such restrictions as to number ... and other conditions' as the party thinks fit.⁵⁶⁹ The authorising party must report such authorisations to the IWC, as well as scientific information relating to whaling, including the results of the research conducted pursuant to Article VIII(1).⁵⁷⁰ The IWC has also adopted other exceptions including catch limits for aboriginal subsistence whaling to satisfy aboriginal subsistence needs.⁵⁷¹ The Convention also includes enforcement provisions. Each party must ensure the application of the Convention and the prosecution and punishment of infractions, and since 1949 at least two inspectors must be maintained on factory ships, and adequate inspection maintained at land stations.⁵⁷² In 1971, the IWC established an international observer scheme, which was operative until the whaling moratorium. Since then, whaling, such as that undertaken by Japan for scientific purposes, or by Norway, which continues to whale under objection, is done without international observers.⁵⁷³

In recent decades, the Convention has been reoriented. Originally intended to be an instrument for the 'orderly development of the whaling industry', it has been transformed into the primary international instrument prohibiting commercial whaling. Events leading up to the moratorium on commercial whaling adopted in 1986 can be divided into phases. The first, which lasted until 1972, regulated the total amount of whales that could be taken in any year by setting 'blue whale

⁵⁶⁴ Preamble. ⁵⁶⁵ Art. I. ⁵⁶⁶ IPE III/B/26-07-80. ⁵⁶⁷ Art. III. ⁵⁶⁸ Art. V(1). ⁵⁶⁹ Art. VIII(1).

⁵⁷⁰ Art. VIII(1) and (3). ⁵⁷¹ See para. 13(a) of the 1999 Schedule, which was adopted in 1982. ⁵⁷² Art. IX.

⁵⁷³ A. Gillespie, *Conservation, Biodiversity and International Law* (Cheltenham, UK: Edward Elgar, 2013), 451.

units' (one blue whale was equal to two fin whales, or two-and-a-half humpbacks, or six sei whales) but did not set individual species limits.⁵⁷⁴ From 1972 to 1976, the IWC operated a quota on a species-by-species basis. In 1976, a 'New Management Procedure' (NMP) was put in place which divided each species into stocks and established a quota for each stock (Initial Management Stocks; Sustained Management Stocks; and Protection Stocks). In the meantime, by the early 1980s, the membership of the IWC had grown significantly, and for the first time composed a majority of anti-whaling nations. In 1982, the requisite three-fourths majority existed, and the IWC adopted a 'moratorium' on commercial whaling, effective as of 1986, by amending the Schedule.⁵⁷⁵

The IWC has also established whale sanctuaries, where commercial whaling is prohibited. The first sanctuary was established in 1938. In 1979, a sanctuary was established in the Indian Ocean,⁵⁷⁶ and in 1994 one in the Southern Ocean.⁵⁷⁷ Proposals for sanctuaries in the South Pacific and in the South Atlantic have repeatedly been presented to the IWC for adoption but the three-quarters majority support required has not yet been obtained.⁵⁷⁸

The ban on commercial whaling led a number of countries, in particular Japan and Iceland, to make use of the Article VIII 'scientific whaling' exception, leading to further controversy and dispute over the meaning of 'scientific research', which is undefined by the Convention or Schedule.⁵⁷⁹ Since 1986, Japan has continued to hunt whales in the Southern Ocean, including within the Sanctuary, under the 'scientific permit' exception. To carry out these activities in the Southern Ocean, Japan established the 'Japanese Whale Research Programme under Special Permit in the Antarctic', called JARPA (1986–2002), and resumed in 2004 as JARPA II.

Whaling in the Antarctic Case

On 31 May 2010, Australia instituted proceedings against Japan before the ICJ, alleging that Japan, by conducting JARPA II, breached international obligations both under the 1946 International Convention for the Regulation of Whaling (ICRW), and under CITES and the Convention on Biological Diversity.⁵⁸⁰ This controversy followed years of opposition by Australia to Japan's JARPA II, as well as calls upon Japan in 2005 and 2007 by the IWC, and by a group of twenty-nine IWC members, not to engage in lethal whaling as part of its JARPA II programme. Between 2008 and 2010, specific negotiations were held under the IWC to address core issues of the

⁵⁷⁴ S. Lyster, *International Wildlife Law* (Cambridge: Grotius, 1985), 25.

⁵⁷⁵ 1992 IWC Schedule, para. 10(e). The amendment came into force on 3 February 1983 except for Japan, Norway, Peru and the Soviet Union, which lodged objections. Peru withdrew its objection on 22 July 1983. Japan withdrew its objections with effect from 1 May 1987 for commercial pelagic whaling, from 1 October 1987 for commercial coastal whaling for minke and Bryde's whales, and from 1 April 1988 for commercial coastal sperm whaling. As Norway and the Russian Federation have not withdrawn their objections, the paragraph is not binding on them.

⁵⁷⁶ S. Holt, 'The Indian Ocean Whale Sanctuary', 12 *Ambio* 6 (1983), 345–7.

⁵⁷⁷ 1999 IWC Schedule, para. 7(a) and (b). ⁵⁷⁸ See proposal IWC/66/08, submitted at the 2016 IWC meeting.

⁵⁷⁹ The IWC adopted in 2008 new Guidelines on scientific permits, which require that all proposed permits have to be submitted for review by the Scientific Committee. The Scientific Committee's review concentrates on the following issues: (1) whether the permit adequately specifies its aims, methodology and the samples to be taken; (2) whether the research is essential for rational management and research; (3) whether the methodology and sample size are likely to provide reliable answers to the questions being asked; (4) whether the questions can be answered using non-lethal research methods; (5) whether the catches will have an adverse effect on the stock; and (6) whether there is the potential for scientists from other nations to join the research programme. A specialist workshop is to review the Scientific Permit Proposals and Research Results.

⁵⁸⁰ *Whaling in the Antarctic (Australia v. Japan)*, Application instituting proceedings, filed on 31 May 2010, available at www.icj-cij.org/docket/index.php?p1=3&p2=3&k=64&code=aj&tp3=0

regime, including the continuance of scientific research permits.⁵⁸¹ Australia called for an end to unilateral scientific whaling, while Japan maintained the need to continue such a programme. Against this background, and with no consensus reached on the matter, Australia filed its application claiming that Japan ‘has breached and is continuing to breach the following obligations under the ICRW’, in particular:

- (a) the obligation under paragraph 10(e) of the Schedule to the ICRW to observe in good faith the zero catch limit in relation to the killing of whales for commercial purposes; and
- (b) the obligation under paragraph 7(b) of the Schedule to the ICRW to act in good faith to refrain from undertaking commercial whaling of humpback and fin whales in the Southern Ocean Sanctuary.⁵⁸²

Australia considered that, having regard to the scale of the JARPA II programme, to the lack of any demonstrated relevance for the conservation and management of whale stocks, and to the risks presented to targeted species and stocks, the JARPA II programme cannot be justified under Article VIII of the ICRW. Australia specifically requested the Court to order that Japan:

- (a) cease implementation of JARPA II;
- (b) revoke any authorisations, permits or licences allowing the activities the subject of this application to be undertaken; and
- (c) provide assurances and guarantees that it will not take any further action under the JARPA II or any similar program until such program has been brought into conformity with its obligations under international law.⁵⁸³

In February 2013, the Court responded favourably to New Zealand’s request to intervene. On 31 March 2014 the Court issued its judgment, ruling in favour of Australia. It ordered Japan to:

revoke any extant authorization, permit or licence granted in relation to JARPA II, and refrain from granting any further permits in pursuance of that programme.⁵⁸⁴

At the heart of the dispute was the question of whether the JARPA programme had been carried out by Japan under legitimate special permits allowed by the Schedule to the ICRW for the purposes of scientific research. As noted above, the ICRW does not define ‘scientific research’ and the Court had to assess this matter. In its judgment, the Court did not provide a set of general criteria to determine what is – and is not – scientific research, but nonetheless considered whether certain activities undertaken under JARPA II were reasonable in relation to their intended research objectives. In particular, the Court considered the potential for using scientific methods that did not involve the killing of whales (non-lethal methods) and whether Japan could

⁵⁸¹ See meeting-related documents on the Future of the IWC at iwc.int/futuredocs ⁵⁸² Application, para. 36.

⁵⁸³ Para. 40.

⁵⁸⁴ *Whaling in the Antarctic (Australia v. Japan: New Zealand intervening)*, Judgment, ICJ Reports 2014, 226, at para. 247(7).

have achieved the objectives of its scientific programme through non-lethal methods. The Court concluded that lethal methods could be acceptable under the rules of the IWC, but that their use could only be justified if there had been due regard of the duty to cooperate with the IWC and its Scientific Committee.⁵⁸⁵ The Court concluded that Japan had not assessed the feasibility of non-lethal alternatives as a means to achieve its research objectives.⁵⁸⁶ On this basis, and also on the basis of the absence of other evidence of Japan having conducted its research under scientific criteria, the Court found that Japan, by granting special permits that were not for the purposes of scientific research 'had not acted in conformity with its obligations' under the Schedule of the ICRW.⁵⁸⁷

In the season 2014–15, immediately after the judgment, Japan did not engage in the taking of whales as part of its research programmes. However, in 2015 and 2016 it did carry out expeditions that resulted in the killing of whales.⁵⁸⁸ In 2015, Japan presented a proposal to IWC's Scientific Committee for a new special permit programme, which was not supported by all members of the Committee.⁵⁸⁹

Regional Agreements

1992 ASCOBANS and 1996 ACCOBAMS

In March 1992, the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (1992 ASCOBANS) was signed, and adopted as an agreement under the 1979 Bonn Convention on Migratory Species.⁵⁹⁰ The Convention was negotiated in the context of drastic decreases in the population of harbour porpoises of the Baltic Sea and the adverse effects of by-catches, habitat deterioration and disturbance on populations of small cetaceans, in the Baltic and North Seas. It establishes a framework for cooperative action to maintain a 'favourable conservation status' for small cetaceans, and commits parties to apply the conservation, research and management measures in line with the Management Plan set out in the Annex.⁵⁹¹ Its provisions do not affect the rights and obligations of a party arising under any other existing treaty, convention or agreement.⁵⁹² The Conservation and Management Plan sets general obligations in relation to: habitat conservation and management; surveys and research; the use of by-catches and strandings; legislation; and information and education. The habitat and conservation measures commit parties to 'work towards' the prevention of release of hazardous substances, the development of modifications to fishing gear and practice to reduce by-catches, the effective regulation of activities that affect their food resources, and the prevention of other

⁵⁸⁵ Para. 83. ⁵⁸⁶ Paras. 137–44.

⁵⁸⁷ Para. 247. See C. R. Payne, 'Australia v. Japan: ICJ Halts Antarctic Whaling', 18 *ASIL Insights* 9 (2014); B. Gogarty and P. Lawrence, 'The ICJ Whaling Case: Science, Transparency and the Rule of Law', 23(2) *Journal of Law, Information and Science* 134 (2014/15); J. J. Smith, 'Evolving to Conservation?: The International Court's Decision in the Australia/Japan Whaling Case', 45(4) *Ocean Development & International Law* 301 (2014); S. V. Scott, 'Australia's Decision to Initiate Whaling in the Antarctic: Winning the Case versus Resolving the Dispute', 68 *Australian Journal of International Affairs* 1 (2014).

⁵⁸⁸ See <http://news.nationalgeographic.com/2016/03/160325-Japan-whaling-minke-whales-Antarctica>; www.japantimes.co.jp/news/2017/01/16/national/politics-diplomacy/australia-disappointed-japans-whale-hunt-southern-ocean

⁵⁸⁹ See <https://iwc.int/iwc-scientific-committee-reports-humpback-whale-re>

⁵⁹⁰ New York, 17 March 1992, in force 29 March 1994; ten states are party.

⁵⁹¹ Art. 2(1) and (2); 'small cetacean' is defined as 'any species, subspecies or population of toothed whales *Odontocet*, except the sperm whale *Physeter macrocephalus*' (Art. 1(2)(a)).

⁵⁹² Art. 8.2.

significant disturbance. Additional measures are required to establish an efficient system for reporting and retrieving by-catches and stranded specimens, and further obligations to 'endeavour to establish' the prohibition under national law of the intentional killing and taking of small cetaceans and the obligation to release any animals caught alive and in good health. The Convention is administered by Meetings of the Parties, assisted by an advisory committee and a secretariat.

The Agreement on the Conservation of the Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (1996 ACCOBAMS) was adopted in 1996 and came into force in June 2001.⁵⁹³ Its principal objective is to maintain a 'favourable conservation status for cetaceans', and to this end any deliberate taking of cetaceans shall be prohibited, and parties shall create and maintain a network of specially protected areas to conserve cetaceans. It follows a structure and organisation similar to ASCOBANS. Parties commit to implementing measures in line with a Conservation Plan set out in Annex 2, which involves: national legislation; assessment and management of human-cetacean interactions; habitat protection; research and monitoring; capacity-building; responses to emergencies.⁵⁹⁴ The Agreement commits to apply the precautionary principle.⁵⁹⁵

1992 NAMMCO

In April 1992, the Faroe Islands, Greenland, Iceland and Norway adopted an Agreement on the North Atlantic Marine Mammals Conservation Organization (NAMMCO)⁵⁹⁶ as a counterbalance to the IWC, which was seen by these countries as having been hijacked by non-whaling interests. The aims of NAMMCO include the conservation of marine mammals in the North Atlantic, although its powers are limited to those of an advisory and scientific nature. Participation in NAMMCO is open to other states provided that they are approved by all parties, a stringent requirement which reflects the desire to prevent entry by states which do not share a similar desire to allow the resumption of at least some commercial whaling and for increased cultural exceptions to the existing moratorium. It remains to be seen whether NAMMCO is an 'appropriate international organisation' within the meaning of Article 65 of UNCLOS.

Marine Mammal Sanctuary in the Mediterranean

In 1999, France, Italy and Monaco concluded an Agreement Concerning the Creation of a Marine Mammal Sanctuary in the Mediterranean. The 1999 Agreement establishes a sanctuary, known as the Pelagos Sanctuary, for whales and dolphins in the Mediterranean Sea in the Corso-Liguro-Provençal Basin, off the coasts of the three signatory states. It is the largest marine protected area in the Mediterranean, which concentrates a remarkable level of biodiversity, especially in terms of top predators, and at the same time is subject to high pressure from human activities, including pollution, fishing techniques and collisions, alongside natural disturbances such as climate variation.⁵⁹⁷ Parties commit to carrying out monitoring and assessment of marine mammal populations in the area, and prohibit their take or disturbance.⁵⁹⁸ They coordinate with other regional initiatives for the conservation of biodiversity and pollution prevention.⁵⁹⁹

⁵⁹³ Monaco, 24 November 1996, in force 1 June 2001, 36 ILM 777 (1997); twenty-three states are party.

⁵⁹⁴ Art. 2 and Annex 2. ⁵⁹⁵ Art. 4. ⁵⁹⁶ Nuuk, Greenland, 9 April 1992, in force 7 July 1992; four states are party.

⁵⁹⁷ Rome, 25 November 1999. See www.sanctuaire-pelagos.org ⁵⁹⁸ Arts. 5-7. ⁵⁹⁹ Arts. 6, 16, 17.

Marine Birds

Albatrosses and petrels are marine migratory species, which are susceptible to threats operating throughout their range, particularly the incidental catch of seabirds during longline and trawl-fishing operations, but also due to chemical contamination, marine pollution and over-exploitation of food resources. Recognising the need for international cooperation on such migratory species, in 2001 states concluded, under the Convention on the Conservation of Migratory Species of Wild Animals (1979 Bonn Convention), the Agreement on the Conservation of Albatrosses and Petrels (ACAP), which entered into force on 1 February 2004 and has been amended several times, most recently in 2015.⁶⁰⁰ The Agreement aims at achieving and maintaining a favourable conservation status for albatrosses and petrels, guided by the precautionary approach. Conservation measures shall apply to species listed in its Annex 1, which currently covers nearly thirty-one species of albatrosses and petrels.

ACAP objectives include research and monitoring, reducing incidental mortality in fisheries, eradicating non-native species at breeding sites and reducing disturbances, habitat loss and pollution.⁶⁰¹ To this end, ACAP cooperates with other organisations that have competence over these species such as CCAMLR,⁶⁰² and with RFMOs, particularly to encourage them to adopt mitigation measures to reduce seabird mortality in longline fisheries in waters outside of national jurisdiction. It also cooperates with advisory organisations such as the Latin American Fisheries Development Organization (OLDEPESCA).⁶⁰³ ACAP is not geographically restricted, although so far it has focused on species that breed in the southern hemisphere.

ACAP supports the implementation of the actions elaborated in the FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds), concluded in 1998.⁶⁰⁴ Brazil, Canada, Japan, New Zealand, South Africa and the United States have developed their own plans of action on the basis of the voluntary IPOA-Seabirds.⁶⁰⁵ FAO has developed additional Technical Guidelines to help states implement this IPOA.⁶⁰⁶

Destructive Fishing Practices

Apart from the rules designed to protect particular species or habitats of fisheries, international law also regulates methods and means of fishing to conserve stocks. The Regulations established by the tribunal in the *Pacific Fur Seal* arbitration prohibited the use of nets, firearms and explosives, and similar provisions are to be found in many international fisheries agreements established since. Technological innovations have led to the use of fishing gear that allows fishing on a large and indiscriminate scale, affecting parts of the oceans previously out of range. Most notably, these practices involve driftnets, with a width of up to 30 miles to sweep the high seas and having high

⁶⁰⁰ Adopted 19 June 2001; thirteen states are party. The last amendment was at the Fifth Session of the Meeting of the Parties, Santa Cruz de Tenerife, 4–8 May 2015. See acap.aq

⁶⁰¹ Arts. III and VI.

⁶⁰² Memorandum of Understanding (MoU) between the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Hobart, 1 April 2010.

⁶⁰³ Memorandum of Understanding between the Latin American Organization for Fisheries Development and the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels, La Paz, Bolivia, 4 September 2009.

⁶⁰⁴ Art. III.1(h). ⁶⁰⁵ See www.fao.org/fishery/ipoa-seabirds/npoa/en

⁶⁰⁶ Report of the Expert Consultation on Best Practice Technical Guidelines for IPOA/NPOA-Seabirds. Bergen, Norway, 2–5 September 2008.

rates of incidental catch such as dolphins, turtles and sea birds, and bottom trawling, which involves the use of a large net with heavy weights, which is dragged across the seafloor, scooping up everything in its path – from the targeted fish to centuries-old corals and other wildlife. Concern about these activities has led to calls for action by the UN General Assembly, which have proven to be seminal in the prohibition of some of these practices at the international level.

In 2016, the Arbitral Tribunal in the *South China Sea* case ruled on the harmful impacts of ‘propeller chopping’ for the harvesting of giant clams, a practice that breaks through coral reefs, and found that this was ‘severely destructive of the coral reef ecosystem’. The Tribunal ruled that this practice violated Articles 192 and 194(5) of UNCLOS.⁶⁰⁷

Driftnet Fishing

The first agreement to address driftnet fishing directly was the 1989 Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, which requires parties to prohibit its nationals and ‘vessels documented under its laws’ from engaging in driftnet fishing activities in the area governed by the 1986 Noumea Convention.⁶⁰⁸ The 1989 Convention defines a driftnet as a ‘gillnet or other net or a combination of nets which is more than 2.5 kilometres in length the purpose of which is to enmesh, entrap or entangle fish by drifting on the surface of or in the water’.⁶⁰⁹ Driftnet fishing activities include: the use of a driftnet to catch, take or harvest fish; attempts to carry out such activities or engage in activities which can reasonably be expected to have that result; and any supporting or preparatory activities.⁶¹⁰ Parties must adopt measures to prevent assistance in the use of driftnets in the Convention’s area of application (the ‘Area’), to prohibit the use of driftnets within their jurisdiction, and to prohibit the transshipment of driftnet catches within areas under their jurisdiction.⁶¹¹ Further measures which parties are permitted but not required to adopt (provided that they are consistent with international law) include: prohibiting the landing of driftnet catches within their territories; prohibiting the processing of driftnet catches in their facilities; prohibiting imports of fish or fish products caught using a driftnet; restricting port access for driftnet fishing vessels; and prohibiting the possession of driftnets on board any fishing vessel within their jurisdiction.⁶¹² The South Pacific Forum Fisheries Agencies (FFA) has administrative responsibilities, and the Convention additionally provides for consultation and cooperation with ‘distant water fishing nations’ and other entities in the conservation of South Pacific albacore tuna.⁶¹³ The Convention is only open to signature, ratification and accession by members of the FFA and to certain states or territories who are within or linked to the Convention Area.⁶¹⁴ In 1990, Protocols to the Convention were adopted to allow states outside the Convention Area to associate themselves with the Convention. Protocol I is open to states whose nationals or fishing vessels fish within the Convention Area, and requires them, inter alia, to prohibit the use of driftnets by their nationals or vessels.⁶¹⁵ Protocol II is open to states that are contiguous with or adjacent to the Convention Area, and also requires them, inter alia, to prohibit the use of driftnets by their nationals or vessels.⁶¹⁶

⁶⁰⁷ *South China Sea Arbitration*, p. 531, paras. 965–6, 848–51, 1203.B(12)(b).

⁶⁰⁸ Wellington, 23 November 1989, in force 17 May 1991, 29 ILM 1454 (1990); thirteen states are party. On the 1986 Noumea Convention, see p. 468.

⁶⁰⁹ Art. 1(b). ⁶¹⁰ Art. 1(c). ⁶¹¹ Art. 3(1). ⁶¹² Art. 3(2). Parties may also take stricter measures (Art. 3(3)).

⁶¹³ Arts. 5–9. ⁶¹⁴ Art. 10.

⁶¹⁵ Noumea, New Caledonia, 20 October 1990, not yet in force, 29 ILM 1462 (1990), Arts. 2 and 7. ⁶¹⁶ *Ibid.*

In 1989, the UN General Assembly took up the issue, and in 1991 adopted a resolution calling on all members of the international community to ensure that a global moratorium on all large-scale pelagic driftnet fishing was fully implemented on the high seas, including enclosed seas and semi-enclosed areas, by 31 December 1992.⁶¹⁷ The resolution was addressed to ‘all members of the international community’, rather than to states or to members of the United Nations, and was adopted despite strong lobbying by commercial interests. The resolution also appeared to implement the precautionary principle by shifting the burden of proof in decision-making: its Preamble noted that some members of the international community had reviewed the best available scientific data on the impact of driftnet fishing and failed to conclude that the practice had no adverse impacts on the conservation and sustainable management of marine living resources. The resolution is not itself legally binding, but the fact that it was adopted by consensus, that its terms are clear, and that it has received support from a very large number of states since its adoption, suggests that it may now reflect a rule of customary international law.⁶¹⁸

Since adoption of this resolution, the UN General Assembly has reaffirmed its call to end driftnet fishing on an almost yearly basis. In 2000, it included a specific item on ‘large-scale pelagic drift-net fishing’ in the agenda for the General Assembly’s yearly resolution on ‘Ocean and the Law of the Sea’, and later on in the so-called ‘Sustainable Fisheries Resolutions’.⁶¹⁹ Since then, the General Assembly has reaffirmed the importance it attaches to compliance with Resolution 46/125 and urged states and entities to enforce its provisions fully. In recent years, the General Assembly has expressed its concern that, ‘despite the adoption of General Assembly resolution 46/215, the practice of large-scale pelagic drift-net fishing still exists and remains a threat to living marine resources’,⁶²⁰ and has urged states ‘individually and through RFMOs, to implement and enforce the present global moratorium on the use of large-scale pelagic driftnets on the high seas’.⁶²¹

Bottom Trawling

In the early 2000s attention was drawn to the harmful impact of deep-sea bottom trawling, which is considered to pose a threat to the biodiversity of vulnerable deep-sea habitats and ecosystems given that deep-sea trawls can remove all forms of deep-sea life from the sea floor. Seamounts and deep-sea corals are regarded as being particularly fragile. This activity generates high levels of by-catch, but debate around the need to ban deep-sea trawling has emphasised its destructive impacts for marine habitats. Current rules are discussed below, in the context of addressing the conservation of marine biodiversity.⁶²²

⁶¹⁷ UNGA Res. 46/215 (1991); UNGA Res. 44/225 (1989); UNGA Res. 45/197 (1990). See D. M. Johnston, ‘The Driftnetting Problem in the Pacific Ocean: Legal Considerations and Diplomatic Options’, 21 *Ocean Development and International Law* 5 (1990); W. T. Burke, ‘Regulation of Driftnet Fishing on the High Seas and the New International Law of the Sea’, 3 *Georgetown International Environmental Law Review* 265 (1991).

⁶¹⁸ Agenda 21 declares that ‘states should fully implement’ Res. 46/215: para. 17.54.

⁶¹⁹ UNGA Res. 55/8 (2000). See also earlier the resolutions, Res. 49/116, Res. 118 (1994), Res. 50/25 (1995), Res. 51/36 (1996), Res. 52/29 (1997), Res. 53/33 (1998) and Res. 55/8 (2000); and the later resolutions, Res. 57/142 (2003), Res. 58/14 (2004), Res. 59/25 (2005), Res. 60/31 (2006), Res. 61/105 (2007), Res. 62/177 (2008), Res. 63/112 (2009) and Res. 64/72 (2010).

⁶²⁰ UNGA Res. 70/75 (2015), para. 110.

⁶²¹ UNGA Res. 70/75 (2015), para. 112.

⁶²² See pp. 555–8.

Illegal, Unreported and Unregulated (IUU) Fishing

A significant proportion of fishing activities is carried out in contravention of existing domestic or international regulations. In addition, there are important ocean areas, species and activities that are not regulated, either by individual states or by international agreements, such as those establishing RFMOs, as called for by UNCLOS and by the 1995 Fish Stocks Agreement. These practices have been acknowledged to result in direct and indirect economic losses, and to have socio-economic impacts and environmental impacts. Known environmental impacts include: overfishing as a result of uncontrolled fishing activity; damage to habitats by using prohibited gear and fishing in protected areas; and by-catch of non-targeted and threatened or endangered species, such as turtles, sharks or marine mammals.⁶²³

It is difficult to make an estimate of ongoing illegal fishing, but, according to research published in 2009, estimates of the total current losses due to illegal and unreported fishing worldwide are between \$9 billion and \$24 billion USD, with greater losses identified in developing countries. It is estimated that in western Africa total catches from illegal and unreported fishing could be 40 per cent higher than reported catches,⁶²⁴ and that imports into the United States of illegal and unreported catches represented 20 to 32 per cent by weight of wild-caught imported seafood in 2011.⁶²⁵ The FAO has initiated an assessment process,⁶²⁶ which in 2016 provided an 'assessment of assessments'.⁶²⁷ That same year the FAO Committee on Fisheries called for new technical guidelines on methodologies and indicators, and reliable periodic estimates of IUU fishing.⁶²⁸

RFMOs began turning their attention to the problem of illegal fishing during the 1990s, as awareness increased about the fact that these practices were undermining the management efforts of regional bodies. CCAMLR was the first organisation to refer to this situation as 'illegal, unreported and unregulated (IUU) fishing' in 1997. Shortly thereafter, the FAO paid attention to

⁶²³ Marine Resources Assessment Group, *Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries* (2005), www.dfid.gov.uk/pubs/files/illegal-fishing-mrag-report.pdf. See generally on IUU fishing: High Seas Task Force, *Closing the Net: Stopping Illegal Fishing on the High Seas*. Governments of Australia, Canada, Chile, Namibia, New Zealand and the United Kingdom, WWF, IUCN and the Earth Institute at Columbia University (2006); K. W. Riddle, 'Illegal, Unreported, and Unregulated Fishing: Is International Cooperation Contagious?', 37 *Ocean Development and International Law* 265 (2006); M. A. Palma, M. Tsamenyi and W. Edeson, *Promoting Sustainable Fisheries: The International Legal and Policy Framework to Combat Illegal, Unreported and Unregulated Fishing* (Leiden: Martinus Nijhoff, 2010); J. T. Theilen, 'What's in a Name: The Illegality of Illegal, Unreported and Unregulated Fishing', 28 *International Journal of Marine and Coastal Law* 533 (2013); G. Handl, 'Flag State Responsibility for Illegal, Unreported and Unregulated Fishing in Foreign EEZs', 44 *Environmental Policy and Law* 158 (2014); S. Kaye, 'Enforcement Cooperation in Combating Illegal and Unauthorized Fishing: An Assessment of Contemporary Practice', 32 *Berkeley Journal of International Law* 316 (2014); M. A. Palma-Robles, 'Tightening the Net: The Legal Link between Illegal, Unreported and Unregulated Fishing and Transnational Crime under International Law', 29 *Ocean Yearbook* 144 (2015); S.-M. Kao, 'International Actions against IUU Fishing and the Adoption of National Plans of Action', 46 *Ocean Development and International Law* 2 (2015); G. A. Oanta, 'Protection and Preservation of the Marine Environment as a Goal for Achieving Sustainable Development on the Rio +20 Agenda', 16 *International Community Law Review* 214 (2014).

⁶²⁴ D. J. Agnew, J. Pearce, G. Pramod et al., 'Estimating the Worldwide Extent of Illegal Fishing', *PLoS ONE* 4(2): e4570. doi:10.1371/journal.pone.0004570

⁶²⁵ G. Pramod et al., 'Estimates of Illegal and Unreported Fish in Seafood Imports to the USA', 48 *Marine Policy* 102 (2014).

⁶²⁶ FAO, *Report of the Expert Workshop to Estimate the Magnitude of Illegal, Unreported and Unregulated Fishing Globally*, Rome, 2–4 February 2015.

⁶²⁷ G. Macfadyen, B. Caillart and D. Agnew, *Review of Studies Estimating Levels of IUU Fishing and the Methodologies Utilized* (Poseidon Aquatic Resource Management, 2016).

⁶²⁸ FAO Committee on Fisheries, Report of the 32nd Session, Rome 11–15 July 2016, para. 79.

this issue and developed, and finally adopted in 2001, the 'International Plan of Action to Prevent, Deter and Eliminate Illegal Unreported and Unregulated Fishing' (IPOA-IUU).⁶²⁹ The IPOA-IUU, elaborated within the framework of the FAO Code of Conduct for Responsible Fisheries, establishes the responsibility for all states, and particularly flag states, to take legislative, control and enforcement measures against IUU fishing. The plan of action provides the most generally accepted definition of 'illegal', 'unreported' and 'unregulated' fishing, which defines 'unregulated' fishing as including fishing activities

in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.

This provision opens up the possibility for states to apply restrictive measures to activities that may not be specifically prohibited but that states regard as contravening, for example, the obligation to 'protect and preserve the marine environment' established by UNCLOS.⁶³⁰

Since 2001, the UN General Assembly has acknowledged in its yearly resolutions that IUU fishing 'remains one of the greatest threats to marine ecosystems and continues to have serious and major implications for the conservation and management of ocean resources'. It has supported the adoption and then the implementation of the IPOA-IUU. Since 2003, it has dedicated a special section of its 'Sustainable Fisheries' resolutions to the topic of IUU fishing, in which it has urged states to take a number of measures to end these practices, such as complying with flag state responsibilities, strengthening international cooperation and having RFMOs take measures in this regard.⁶³¹ The Johannesburg Plan of Implementation also called upon states to develop national and regional plans of action to implement the FAO Plan by 2004.⁶³² Likewise, increased recognition of the need to address IUU fishing at all levels, featured in the Rio+20 summit outcome document,⁶³³ and in targets of Sustainable Development Goal 14 concerned with fisheries.⁶³⁴

Since 2001, steps have been taken to implement the IPOA-IUU at the domestic, regional and global levels. In 2007, the EU adopted a new strategy to prevent, deter and eliminate IUU fishing, which was followed by ambitious legislation that would keep out of the EU market all fish that cannot be certified as not resulting from IUU operations.⁶³⁵ In the framework of RFMOs,

⁶²⁹ International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), approved by the FAO Committee on Fisheries by consensus on 2 March 2001. See also the later 2005 Rome Declaration on Illegal, Unreported and Unregulated Fishing, Adopted by the FAO Ministerial Meeting on Fisheries, Rome, 12 March 2005. See J. Swan, *International Action and Responses by Regional Fishery Bodies or Arrangements to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing*, FAO Fisheries Circular No. 996 (2004), 1-2.

⁶³⁰ Para. 3.3.2; and for a definition of IUU fishing, see more generally para. 3 of the IPOA-IUU.

⁶³¹ See UNGA Resolution on 'Oceans and the Law of the Sea' (2001-4); and UNGA Resolutions on 'Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments' since 2003. Most recently, see UNGA Res. 70/71 (2015), especially paras. 59-87. See also Part V of the Resolution.

⁶³² Para. 31(d). ⁶³³ *Future We Want*, para. 170. ⁶³⁴ See p. 458.

⁶³⁵ Strategy for the Community to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, COM (2007) 601 final, not published in the Official Journal; Council Regulation (EC) No. 1005/2008; Commission Regulation (EC) No. 1010/2009, and amending legislation.

a number of measures have been adopted since the mid 2000s to strengthen monitoring, control and surveillance efforts; introduce catch documentation schemes to ensure the legality of catches of valuable stocks, such as toothfish and bluefin tuna; and adopt lists of vessels engaged in IUU fishing, which are banned from certain activities, such as the landing of fish in ports of RFMO members.

2009 Agreement on Port State Measures

Primary responsibility to ensure compliance by fishing vessels with international measures on the high seas rests with the flag state. However, lack of effective control by some flag states, including the proliferation of 'flags of convenience' where there is no genuine link between the state of registry and the vessel,⁶³⁶ and unsuccessful attempts to improve regulation over this issue through the 1993 Compliance Agreement,⁶³⁷ prompted international support for the strengthening of the role of port states in fisheries enforcement. On the basis of the 2005 FAO Port State Model Scheme,⁶³⁸ and calls for the adoption of a new international treaty setting minimum standards for port state measures by the 2006 UN Review Conference on the 1995 Fish Stocks Agreement,⁶³⁹ in 2009, after a year-and-a-half of negotiations, the FAO Conference adopted the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA).⁶⁴⁰ The Agreement entered into force in June 2016.⁶⁴¹

The PSMA recognises the rights of the port states, but also establishes a number of port state obligations to take measures against vessels identified as being engaged in IUU fishing or fishing-related activities. Under the PSMA, the port state can be required to deny port entry, landing and trans-shipment, and access to port services to vessels for which there is sufficient proof of engagement in IUU fishing. Port states are required to carry out an adequate number of vessel inspections and report to other states and international organisations on their findings.⁶⁴² The PSMA introduces, for the first time, a definition of IUU fishing in a binding agreement of a global nature,⁶⁴³

⁶³⁶ See M. Gianni and W. Simpson, *The Changing Nature of High Seas Fishing: How Flags of Convenience Provide Cover for Illegal, Unreported and Unregulated Fishing* (Australian Department of Agriculture, Fisheries and Forestry, International Transport Workers' Federation, and WWF International, 2005).

⁶³⁷ See p. 519.

⁶³⁸ FAO Council, 128th Session, Rome, 20–25 June 2005, Doc. CL128/7, para. 25. The Model Scheme is a non-binding international instrument that describes basic and minimum port state measures that should be applied by responsible port states and RFMOs, individually or through the adoption of regional agreements.

⁶³⁹ Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, *Compilation of the Recommendations Adopted at the Review Conference in 2006 and Information on the Extent to which the Recommendations Have Been Implemented by States and Regional Fisheries Management Organizations and Arrangements*, UN Doc. A/CONF.210/2010/INF/1.

⁶⁴⁰ Approved by the FAO Conference at its 36th Session on 22 November 2009, through Res. No. 12/2009, under Art. XIV(1) of the FAO Constitution.

⁶⁴¹ As at March 2017, forty-three states are party. See www.fao.org/fileadmin/user_upload/legal/docs/037s-e.pdf. See also J. Swan, 'Port State Measures to Combat IUU Fishing: International and Regional Developments', 7 *Sustainable Development Law and Policy* 38 (2006); E. Witbooi, 'Illegal, Unreported and Unregulated Fishing on the High Seas: The Port State Measures Agreement in Context', 29 *International Journal of Marine and Coastal Law* 290 (2014); A. Telesetsky, 'Scuttling IUU Fishing and Rewarding Sustainable Fishing: Enhancing the Effectiveness of the Port State Measures Agreement with Trade-Related Measures', 38 *Seattle University Law Review* 1237 (2015).

⁶⁴² See in particular Arts. 9, 11 and 12.

⁶⁴³ It incorporates the definition of the 2001 FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).

and establishes the need for a global information-sharing system for the exchange of information relevant to the PSMA.⁶⁴⁴

Voluntary Guidelines for Flag State Performance

In 2014 the FAO Committee on Fisheries endorsed a set of guidelines for ‘strengthening compliance by flag States with their international duties and obligations regarding the flagging and control of fishing vessels’.⁶⁴⁵ The initial intention was that the Guidelines would provide a set of criteria that could be used to assess the performance of any state against their duties, and best practice as a flag state. However, during the negotiations this goal was abandoned as some countries had concerns that such performance criteria could be used to take action against a state assessed not to be meeting the performance criteria. The final Voluntary Guidelines are essentially a compilation of existing international measures that regulate the rights and obligations of flag states, such as those established in UNCLOS, the 1993 FAO Compliance Agreement, the 1995 FAO Code of Conduct for Responsible Fisheries and the 2001 FAO International Plan of Action to Prevent, Deter and Eliminate IUU fishing.⁶⁴⁶

ITLOS Jurisprudence

Advisory Opinion by ITLOS on IUU Fishing

In April 2015, the ITLOS gave an Advisory Opinion in response to the request submitted by the Sub-Regional Fisheries Commission (SRFC) seeking clarification on matters related to the obligations of flag and coastal states in regard to IUU Fishing.⁶⁴⁷ This Opinion is the first to be delivered by the full Tribunal, and raised jurisdictional questions. ITLOS found that it had jurisdiction under its Rules, which permit the request of advisory opinions based on an international agreement related to the purposes of UNCLOS.⁶⁴⁸ However, the Tribunal restricted its jurisdiction to the EEZs of SRFC members.⁶⁴⁹

The SRFC is a regional organisation of seven West African coastal states established to promote cooperation for the conservation and management of marine living resources. The request from the SRFC was presented in the context of increasing concern in the region and

⁶⁴⁴ Art. 16.

⁶⁴⁵ Text of Guidelines available at FAO Doc. COFI/2014/4.2/Rev.1, Appendix 2, Para. 2. For a commentary, see K. Erikstein and J. Swan, ‘Voluntary Guidelines for Flag State Performance: A New Tool to Conquer IUU Fishing’, 29 *International Journal of Marine and Coastal Law* 116 (2014).

⁶⁴⁶ For documents regarding the *Report of the Expert Consultation on Flag State Performance*, Rome, 23–26 June 2009; and *Technical Consultation on Flag State Performance (FI-805)*, Rome, 2–6 May 2011, see www.fao.org/fishery/nems/39660/en

⁶⁴⁷ *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC)*, Case No. 21, Advisory Opinion of 2 April 2015, available at www.itlos.org/en/cases/list-of-cases/case-no-21

⁶⁴⁸ Art. 138(1) of ITLOS Rules. See J. Gao, ‘The ITLOS Advisory Opinion for the SRFC’, 14(4) *Chinese Journal of International Law* 735 (2015); T. Stephens, ‘ITLOS Advisory Opinion: Coastal and Flag State Duties to Ensure Sustainable Fisheries Management’, 19 *ASIL Insights* 8 (2015) at www.asil.org/print72823; C.H. Allen, ‘Guest Post: Law of the Sea Tribunal Adopts “Due Diligence” Standard for Flag State Responsibility for IUU Fishing’, *Opinio Juris*, at opiniojuris.org/2015/04/04/guest-post-law-of-the-sea-tribunal-adopts-due-diligence-standard-for-flag-state-responsibility-for-iuu-fishing; V. Alencar Mayer Feitosa Ventura, ‘Tackling Illegal, Unregulated and Unreported Fishing: The ITLOS Advisory Opinion on Flag State Responsibility for IUU Fishing and the Principle of Due Diligence’, 12 *Brazilian Journal of International Law* 50 (2015); V. Schatz, ‘Fishing for Interpretation: The ITLOS Advisory Opinion on Flag State Responsibility for Illegal Fishing in the EEZ’, 47 *Ocean Development and International Law* 327 (2016).

⁶⁴⁹ Advisory Opinion, para. 219.

internationally over the high level of IUU fishing occurring in West Africa, particularly within the EEZs of the SRFC members. The questions presented to the Tribunal were:

1. What are the obligations of the flag State in cases where illegal, unreported and unregulated (IUU) fishing activities are conducted within the Exclusive Economic Zone of third party States?
2. To what extent shall the flag State be held liable for IUU fishing activities conducted by vessels sailing under its flag?
3. Where a fishing license is issued to a vessel within the framework of an international agreement with the flag State or with an international agency, shall the State or international agency be held liable for the violation of the fisheries legislation of the coastal State by the vessel in question?
4. What are the rights and obligations of the coastal State in ensuring the sustainable management of shared stocks and stocks of common interest, especially the small pelagic species and tuna?

In responding, ITLOS offered significant clarifications. Of special significance were its determination of the extent of the responsibility of coastal and flag states, and also its opinions on the content of the obligations of the coastal state to conserve marine living resources, as established in UNCLOS.

In response to the first question, the Tribunal stated that for activities occurring within a state's EEZ, primary responsibility rests with the coastal state. However, the Tribunal found that, under UNCLOS, 'flag States are obliged to take the necessary measures to ensure that their nationals and vessels flying their flag are not engaged in IUU fishing activities'.⁶⁵⁰ ITLOS clarified what these obligations of the flag state amount to in the context of IUU fishing activities, and, referring to the considerations of the Seabed Disputes Chamber Advisory Opinion of 2011, stated that the obligation of the flag state is one of 'due diligence' not one 'of result'. Recalling that opinion, it concluded that, for flag states:

this is an obligation 'to deploy adequate means, to exercise best possible efforts, to do the utmost' to prevent IUU fishing by ships flying its flag.⁶⁵¹

Addressing the fourth question, which is more relevant to the general obligations of coastal states regarding the conservation of living resources in their EEZ, ITLOS outlined the obligations of UNCLOS, particularly Articles 61 to 64, and stressed the requirement to apply – pursuant to Article 2.2. of the MCA Convention – the precautionary approach whenever best scientific evidence is insufficient.⁶⁵² The Tribunal emphasised the duty of coastal states to have due regard to the rights and duties of other states, as framed in the context of the general obligation to protect and preserve the marine environment established in Articles 192 and 193 of UNCLOS. The Tribunal in so doing connected the obligations of Part XII, essentially concerned with marine pollution, to those on the conservation of living resources in states' EEZ. This offers a more

⁶⁵⁰ Para. 124.

⁶⁵¹ Para. 129. This view was later endorsed in the Arbitral Award in the *South China Sea Arbitration*, p. 531.

⁶⁵² Para. 219, p. 56.

integrated approach to fisheries management and emphasises the limits to coastal states' sovereign rights. The Tribunal added:

Living resources and marine life are part of the marine environment and, as stated in the Southern Bluefin Tuna Cases, 'the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment'.⁶⁵³

The M/V 'Virginia G' Case (Panama v. Guinea-Bissau)

The *M/V 'Virginia G'*, an oil tanker flagged to Panama, was arrested in August 2009 by the authorities of Guinea-Bissau when it was supplying fuel to fishing vessels in the EEZ of Guinea-Bissau without authorisation to do so. The vessel was detained for nearly a year and a half, with an initial order to confiscate the vessel and its cargo, which was later suspended, as an interim measure. Panama brought charges against Guinea-Bissau alleging the breach of several provisions of UNCLOS, particularly Article 56 on the rights of the coastal state in the EEZ and Article 73 on the coastal state's rights to enforce its laws to conserve and manage marine living resources, and requesting compensation for damages.⁶⁵⁴ ITLOS delivered its judgment on 14 April 2014, ruling that Guinea-Bissau had the right to take certain necessary enforcement measures but also deciding in favour of Panama that there had been a breach of Article 73.4 on the duty to notify the flag state. In a divided decision, Panama was awarded compensation for confiscation of gas oil and for the costs of repairs, amounting to more than \$500,000 USD plus interest.⁶⁵⁵

The Tribunal acknowledged that the coastal state is entitled to regulate bunkering (the supply of fuel at sea) by foreign vessels as part of its rights regarding the utilisation of living resources in EEZ. The Tribunal found that the coastal state can, under Article 62, regulate any activity related to fisheries, invoking various international agreements, including the 2009 Port State Measures Agreement.⁶⁵⁶ The Tribunal found also that the coastal state can, under Article 73, take certain enforcement actions, including confiscation of a vessel or its cargo. In this case, however, the Tribunal found that confiscation was 'unreasonable'.⁶⁵⁷

CONSERVATION OF MARINE BIODIVERSITY

Introduction

The conservation of marine biodiversity and ecosystems is intimately related to the prevention of marine pollution and the sustainable management of marine living resources, reviewed in the

⁶⁵³ *Ibid.*, p. 66.

⁶⁵⁴ *M/V 'Virginia G' (Panama/Guinea-Bissau)*, Judgment, ITLOS Reports 2014, p. 4, para. 49. See generally C. H. Allen, 'Guest Post: Law of the Sea Tribunal Implies a Principle of Reasonableness in UNCLOS Article 73', *Opinio Juris* (2014), at opiniojuris.org/2014/04/17/guest-post-law-sea-tribunal-implies-principle-reasonableness-unclos-article-73; V. Cogliati-Bantz, 'Introductory Note to the *M/V "Virginia G"* Case (*Panama/Guinea-Bissau*) (ITLOS)', 53 *International Legal Materials* 1161 (2014); V. J. Schatz, 'Combating Illegal Fishing in the Exclusive Economic Zone – Flag State Obligations in the Context of Primary Responsibility of the Coastal State', 7 *Goettingen Journal of International Law* 2 (2015).

⁶⁵⁵ *Panama/Guinea-Bissau* case, para. 452. ⁶⁵⁶ *Ibid.*, paras. 215–17, and 452. ⁶⁵⁷ *Ibid.*, paras. 270–1.

previous sections. Success in pollution abatement and sustainable fisheries practices can ensure that marine ecosystems and biodiversity remain healthy. At the same time, international environmental law has recognised the conservation of marine biodiversity as a regulatory goal in and of itself.

After UNCED, and as reflected in the WSSD Plan of Implementation, Rio+20 Summit outcome document and the Sustainable Development Goals, international arrangements began to introduce progressively an ecosystem approach to their regimes, and therefore to consider the impacts that different activities had on oceans as a whole. This allowed greater linkage between efforts to abate pollution and measures to manage living resources sustainably and, more generally, to 'conserve biological diversity' in the sense called for by the Convention on Biological Diversity. In this regard, initiatives such as the ones adopted in the framework of the OSPAR and HELCOM Conventions, as well as in a number of UNEP Regional Seas Agreements, provide illustrations of the integration of conservation concerns into agreements that were principally designed to combat marine pollution. The decision by the UN General Assembly to negotiate an international agreement on the conservation of biological diversity in areas beyond national jurisdiction brings the duty to cooperate to a level of greater international integration.

From Agenda 21 to the Sustainable Development Goals

Agenda 21 called for more integrated approaches to marine and coastal area management and development, and, among other objectives, it established that coastal states should undertake measures to maintain biological diversity and productivity of marine species and habitats under national jurisdiction through research and the establishment of marine protected areas.⁶⁵⁸

The 2002 Johannesburg Plan of Implementation supported the implementation of Chapter 17 of Agenda 21, and established specific objectives concerning the conservation of the oceans to:

- (a) Maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, including in areas within and beyond national jurisdiction;
- (b) Implement the work programme arising from the Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity of the Convention on Biological Diversity, including through the urgent mobilisation of financial resources and technological assistance and the development of human and institutional capacity, particularly in developing countries;
- (c) Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 and time/area closures for the protection of nursery grounds and periods, proper coastal land use and watershed planning and the integration of marine and coastal areas management into key sectors;
- (d) Develop national, regional and international programmes for halting the loss of marine biodiversity, including in coral reefs and wetlands;
- (e) Implement the Ramsar Convention including its joint work programme with the Convention on Biological Diversity, and the programme of action called for by the International Coral Reef Initiative to strengthen joint management plans and international networking for wetland ecosystems in coastal zones, including coral reefs, mangroves, seaweed beds and tidal mud flats.⁶⁵⁹

⁶⁵⁸ Agenda 21, paras. 17.1, 17.7, 17.8 and 17.86.

⁶⁵⁹ Plan of Implementation, para. 32. On the Ramsar Convention, see Chapter 10, p. 420.

The Rio+20 outcome document, *The Future We Want*, opened its section on ocean-related objectives by stressing the need to take an integrated approach for the conservation and sustainable use of the oceans, recognising that ‘oceans, seas and coastal areas form an integrated and essential component of the Earth’s ecosystem and are critical to sustaining it’.⁶⁶⁰ It also recognised the importance of the ‘conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction’,⁶⁶¹ and reaffirmed the importance of ‘area based conservation measures’, including marine protected areas.⁶⁶²

Sustainable Development Goal 14, agreed by the UN General Assembly in 2015 to conserve and sustainably use the oceans, seas and marine resources for sustainable development, synthesises the objectives developed in the past decades, as they have evolved, and establishes specific targets for the protection of biodiversity:

- 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.
- 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.
- 14.4 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

Resolutions of the United Nations General Assembly

UN General Assembly resolutions are not binding, but in the field of protection of marine biodiversity have played a particularly influential role in the progressive development of international measures for the conservation of marine biodiversity and ecosystems. As mentioned earlier, the resolutions of the General Assembly to end driftnet fishing had a positive impact in substantially reducing the use of this gear. Since 2002, the UN General Assembly has called for the protection of deep-sea ecosystems and its resolutions have prompted RFMOs and states to take precautionary approaches in the regulation of bottom fishing, particularly bottom trawling, and to protect vulnerable marine ecosystems.⁶⁶³

Since 1997, the UN General Assembly has adopted, on an annual basis, a resolution on the topic of ‘Oceans and the Law of the Sea’. From 2002, these resolutions called upon states to implement the objective of the Johannesburg Plan of Implementation to establish marine protected areas, and since 2012, have placed a greater emphasis on the objectives set in *The Future We Want*. In addition, since 2003, the General Assembly has adopted annually a resolution on sustainable fisheries, which calls for states to implement the ecosystem approach to fisheries management. In 1999, the UN General Assembly established the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea (also known as

⁶⁶⁰ Para. 158. ⁶⁶¹ Para. 162. ⁶⁶² Para. 177.

⁶⁶³ See generally the yearly resolutions on ‘Sustainable Fisheries, Including Through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and Related Instruments’.

UNICPOLOS) to review on an annual basis the developments in ocean affairs and the law of the sea, choosing a particular theme for each yearly meeting. These have addressed, among other topics, the impacts of ocean acidification in 2013, marine genetic resources in 2007 and ecosystem approaches in 2006.⁶⁶⁴

The International Legal Framework

UNCLOS and the 1995 Fish Stocks Agreement

Under UNCLOS, 'states have the obligation to protect and preserve the marine environment'. This obligation is established in Article 192, which opens Part XII on 'Protection and Preservation of the Marine Environment', and is not limited to the duties to combat pollution that follow in Part XII. ITLOS has recognised the conservation of the living resources of the sea as 'an element in the protection and preservation of the marine environment'.⁶⁶⁵ In the *Chagos Marine Protected Area* case, the Arbitral Tribunal found that Part XII is 'not limited to measures aimed strictly at controlling marine pollution' and that '[w]hile the control of pollution is certainly an important aspect of environmental protection, it is by no means the only one.'⁶⁶⁶ The Arbitral Tribunal took into consideration Article 194(5), which establishes, in relation to states' obligations to prevent, reduce and control pollution, that

the measures taken in accordance with this Part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.

With regard to fisheries, UNCLOS, when establishing the rights of coastal states over living resources, formulates in Article 61 a general obligation for coastal states to cooperate with competent international organisations and specifies that the coastal state, in determining its conservation and management measures, shall take into account a number of factors, including 'fishing patterns, the interdependence of stocks, and any generally recommended international minimum standards, whether sub-regional, regional or global'. It adds that, in taking such measures it shall 'take into consideration the effects on species associated with or dependent upon harvested species'.⁶⁶⁷ Article 145, concerning protection of the marine environment with respect to activities to exploit resources of the seabed in areas beyond national jurisdiction ('the Area'), requires the International Seabed Authority to take measures for 'the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.'

The 1995 Fish Stocks Agreement, which, as explained above, supplements the provisions of UNCLOS on the conservation of marine species, incorporates ecosystem and precautionary approaches. Further, in Article 5, the Agreement expressly establishes that coastal states and states fishing on the high seas shall 'protect biodiversity in the marine environment'.⁶⁶⁸

⁶⁶⁴ UNGA Res. 54/33. ⁶⁶⁵ *Southern Bluefin Tuna* case, para. 70.

⁶⁶⁶ *Chagos Marine Protected Area* case, pp. 560–2, paras. 320, 538. ⁶⁶⁷ Art. 61(3) and 61(4).

⁶⁶⁸ On the 1995 Fish Stocks Agreement, see p. 517.

South China Sea Arbitration

In 2016, the Arbitral Award on the *South China Sea* case, considered damage to marine biodiversity and ecosystems. The case, brought by the Philippines against China, addressed maritime rights and entitlements, but also examined damage caused to endangered species and fragile ecosystems in the South China Sea as a result of destructive fishing practices, poaching and direct habitat destruction resulting from the construction of artificial islands on coral reefs.

The Arbitral Tribunal made significant findings:

- It reiterated that the general obligation under Article 192 of UNCLOS applies both in and beyond national jurisdiction, and includes a positive obligation to take active measures to protect the marine environment and a negative obligation to refrain from causing damage.⁶⁶⁹
- It confirmed that Part XII of UNCLOS is not solely concerned with controlling marine pollution. It extends to the conservation of living resources, the protection of fragile ecosystems, as established in Article 194(5), and the prevention of harvesting of endangered species, informed by CITES.⁶⁷⁰
- It considered, as established also by ITLOS in its *Advisory Opinion on IUU Fishing*, that the exercise of these obligations includes a duty of 'due diligence', where it is not sufficient to adopt measures to prevent damage to the marine environment.
- It recalled the importance for states to cooperate, also in the context of states bordering semi-enclosed seas, and to conduct assessments under Article 206.⁶⁷¹

The Tribunal found that China had not acted with due diligence to ensure that Chinese fishermen did not harvest endangered species such as giant clams, corals or marine turtles, or engage in destructive fishing practices such as the chopping of reefs with propellers to release giant clams. It also found that China, in its building of artificial islands, had caused direct habitat destruction and indirect harm to marine organisms.⁶⁷²

Convention on Biological Diversity

The provisions of the Convention on Biological Diversity (CBD) also extend to marine biodiversity, and are not overridden by UNCLOS as long as they are consistent with the 'general principles and objectives' of the Convention.⁶⁷³ The CBD does not contain a general obligation to protect biodiversity, as in the 1995 Fish Stocks Agreement, but it establishes the responsibility of states 'to ensure that activities within their jurisdiction *or control* do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction'.⁶⁷⁴ Since the first Conference of the Parties to the CBD, marine issues have consistently been part of its agenda. At the second meeting, in 1995, parties adopted the Jakarta Mandate on Marine and Coastal Biological Diversity,⁶⁷⁵ which led to the development of a work plan which set objectives and priority activities within the five key programme elements: implementation of integrated marine and coastal area management; marine and coastal living resources; marine and coastal protected areas; mariculture; and invasive alien species.⁶⁷⁶ In 2010, the CBD parties adopted a

⁶⁶⁹ *South China Sea Arbitration*, paras. 940–1, also recalling *ITLOS Advisory Opinion on IUU Fishing*, p. 546.

⁶⁷⁰ *Ibid.*, paras. 956, 959. ⁶⁷¹ See further, Chapter 14, pp. 665–6. ⁶⁷² *South China Sea Arbitration*, paras. 854–7.

⁶⁷³ Birnie, Boyle and Redgwell, *International Law and the Environment*, 750. ⁶⁷⁴ Art. 3 (emphasis added).

⁶⁷⁵ Decision II/10 (1995). ⁶⁷⁶ Decision VII/5 (2005).

new plan of action for the following decade, 2011–20 (known as the Aichi Targets).⁶⁷⁷ The Aichi Targets set objectives that are relevant to both terrestrial and marine biodiversity, such as the elimination of harmful incentives, such as subsidies, or controlling invasive alien species.⁶⁷⁸ The Conference of the Parties identified some particular targets for the marine environment:

Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Target 11: By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

The Conference of the Parties has also taken decisions on a number of ocean-related issues, including decisions relating to the conservation and sustainable use of deep seabed genetic resources beyond the limits of national jurisdiction,⁶⁷⁹ implementation of integrated marine and coastal area management,⁶⁸⁰ sustainable fisheries,⁶⁸¹ and impacts of noise pollution and acidification.⁶⁸² A significant number of decisions have concerned the establishment of marine protected areas.⁶⁸³

Regional Arrangements

Most regional seas agreements, whether concluded under the umbrella of UNEP or independently of it, contain at least one provision aimed at ensuring the conservation of special habitats and species. Half of UNEP Regional Seas Agreements state, in very similar formulations, that contracting parties shall

individually or jointly take all appropriate measures to protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species in the Convention Area. To this end the Contracting Parties shall endeavour to establish [or establish] protected areas.⁶⁸⁴

The 1992 Black Sea Convention introduces a different objective, stating that parties, when taking measures to abate pollution, shall ‘pay particular attention to avoiding harm to marine

⁶⁷⁷ UNEP/CBD/COP/DEC/X/2, 29 October 2010. ⁶⁷⁸ Targets 3 and 9, respectively. ⁶⁷⁹ Decision VIII/21 (2008).

⁶⁸⁰ Decision VIII/22 (2006). ⁶⁸¹ Decision XI/18 (2012). ⁶⁸² Decision XI/23 (2012).

⁶⁸³ Decision VIII/24 (2006).

⁶⁸⁴ Barcelona Convention, Art. 10; Noumea Convention, Art. 14; Nairobi Convention, Art. 10; Cartagena Convention, Art. 10; Abidjan Convention, Art. 11.

life and living resources, in particular by changing their habitat'.⁶⁸⁵ The more recent 2002 Antigua Convention for the North East Pacific region and the 2003 Tehran Convention for the Protection of the Marine Environment of the Caspian Sea establish a number of objectives related to the protection of marine biological diversity, and require parties to adopt measures which include the identification of areas to be protected and the rehabilitation of degraded habitats and ecosystems; the identification and protection of endangered species of flora and fauna; and the identification of marine coastal areas vulnerable to human-made activities.⁶⁸⁶

A number of the regional agreements have been complemented by a specific protocol concerning the establishment of protected areas and/or the protection of habitats and species. Examples include: the 1982 Geneva Protocol Concerning Mediterranean Specially Protected Areas (1982 Geneva SPA Protocol);⁶⁸⁷ the 1985 Nairobi Protocol Concerning Protected Areas and Wild Fauna and Flora (1985 Nairobi Fauna and Flora Protocol);⁶⁸⁸ the 1989 Paipa Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific (1989 Paipa SPA Protocol);⁶⁸⁹ the 1990 Kingston Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region (1990 Kingston SPA Protocol);⁶⁹⁰ the 2002 Black Sea Biodiversity and Landscape Conservation Protocol;⁶⁹¹ the 2005 Protocol Concerning the Conservation of Biological Diversity and the Establishment of a Network of Protected Areas in the Red Sea and Gulf of Aden; the 2008 Protocol on Integrated Coastal Zone Management in the Mediterranean,⁶⁹² and the 2014 Protocol for the Conservation of Biological Diversity to the Framework Convention for the Protection of the Marine Environment of the Caspian Sea.⁶⁹³

Some of these regional arrangements have established programmes on biodiversity protection. Of these, a number are quite well developed, as in the Caribbean region, and particularly in the Mediterranean, with the Specially Protected Areas Regional Activity Centre (SPA/RAC). OSPAR and HELCOM have long-standing programmes to set up and manage marine protected areas, although HELCOM, which is more advanced in its conservation efforts than other regional arrangements, has acknowledged that its network of MPAs is 'neither complete nor coherent'; that most of the MPAs are not effectively managed, and that the targets of the Joint HELCOM/OSPAR Work Programme (JWP) and the Aichi Target 11 have not yet been fully achieved.⁶⁹⁴ Other regional agreements have made less progress in this regard, although some regimes, such as that of the Abidjan Convention, agreed in 2011 to develop a protocol on marine protected areas.⁶⁹⁵

⁶⁸⁵ Art. XIII.

⁶⁸⁶ Art. 6.2(c), (d), (f) and (g). See also Art. 10 on integrated coastal management, Antigua Convention; Arts. 12, 14 and 15 of the Tehran Convention.

⁶⁸⁷ Geneva, 3 April 1982, in force 23 March 1986, IELMT 982:26; twenty-one states and the EU are party. Revised in Barcelona on 9–10 June 1995 as the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA and Biodiversity Protocol), in force 12 December 1999, OJ L322, 14 December 1999, 3.

⁶⁸⁸ Nairobi, 21 June 1985, not in force, IELMT 985:47. ⁶⁸⁹ Paipa, 21 September 1989, in force 1994, IELMT 989:71.

⁶⁹⁰ Kingston, 18 January 1990, in force 18 June 2000, 1 *Yearbook of International Environmental Law* 441 (1990); nine states are party.

⁶⁹¹ Sofia, 14 June 2002, not in force; four states are party. ⁶⁹² Madrid, 21 January 2008, in force 24 March 2011.

⁶⁹³ Ashgabat, 30 May 2014, not in force. ⁶⁹⁴ HELCOM Recommendation 35/1 (1 April 2014).

⁶⁹⁵ On regional initiatives to establish marine protected areas, see p. 468.

Protection of Deep-Sea Ecosystems

The deep sea is perceived as the last frontier for the expansion of marine fisheries.⁶⁹⁶ Particularly since the mid 1990s, greater pressure has been placed on deep-sea fisheries, mainly as a result of the reduction of fish stocks inside EEZs and technological advances that have allowed vessels to reach all corners of oceans (also, it should be noted, with the assistance of continued subsidies to bottom trawl fleets).⁶⁹⁷ Deep-sea fisheries are considered to encompass fishing below 400 metres and down to 2,000 metres. Bottom trawling is the fishing method used by nearly 70 per cent of vessels engaged in these fisheries,⁶⁹⁸ which involves the trawl making bottom contact for several hours. Bottom trawls take with them, in addition to targeted species, non-targeted species, and damage vulnerable habitats and species such as corals and sponges.⁶⁹⁹ Some of the principal targeted fisheries are: roundnose grenadier, orange roughy, northern prawns, Greenland halibut and American plaice.

There is limited data on the levels of biodiversity in the deep sea but there is general agreement that the diversity of bottom dwelling species in the deep ocean areas is high. Little is also known about the impacts of bottom fishing on deep-sea habitats and species. However, it is thought that impacts may be felt on the functional aspects of the ecosystem as a result of the removal of species from the ecosystems in which they play a role, and also on the structural elements of the ecosystem as a result of the physical impact of fishing on rare or fragile organisms attached to the seabed, which are keystone species and/or shape the basic structure of the benthic ecosystems in which many of these fisheries are found. With regard to the physical impact of fishing, the International Council for the Exploration of the Sea (ICES) concluded in 2002, with reference to deep-sea fishing in the North Atlantic, that ‘there is sufficient information to suggest that the most effective way of mitigating the effect of [deep-water] trawling on these habitats is to close such areas to fishing’.⁷⁰⁰

International law does not regulate high seas deep-sea fisheries specifically. However, UNCLOS, the 1995 Fish Stocks Agreement and the Convention on Biological Diversity, whose principal provisions have been explained above, provide a basic legal framework for approaching the issues raised. UNCLOS determines fishing rights on a territorial basis: it establishes the rights of the coastal state to fish within its EEZ, including its deep sea (Articles 56 and 61) and to

⁶⁹⁶ FAO, *Deep-Sea Fisheries in the High Seas* (2009), 2.

⁶⁹⁷ U. R. Sumaila, A. Khan, L. Teh, R. Watson, P. Tyedmers and D. Pauly, ‘Subsidies to High Seas Bottom Trawl Fleets and the Sustainability of Deep-Sea Demersal Fish Stocks’, 34 *Marine Policy* 495 (2010). On the question of fisheries subsidies and their relationship with the rules of international trade, see Chapter 18, pp. 895–8.

⁶⁹⁸ FAO, *Deep-Sea Fisheries in the High Seas*, 4.

⁶⁹⁹ M. Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems: Options for International Action* (IUCN, 2004), 10.

⁷⁰⁰ Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems*, 16. See also *ibid.*, pp. 4–8 and 12–17, for a review of deep-sea ecosystems and the impacts of bottom fisheries. Scientific research has advanced since to further corroborate this assessment: see United Nations World Ocean Assessment, Chapter 51, Biological Communities on Seamounts and Other Submarine Features Potentially Threatened by Disturbance (2015); UN Secretary General, Actions taken by States and regional fisheries management organizations and arrangements in response to paragraphs 113, 117 and 119 to 124 of General Assembly resolution 64/72 and paragraphs 121, 126, 129, 130 and 132 to 134 of General Assembly resolution 66/68 on sustainable fisheries, addressing the impacts of bottom fishing on vulnerable marine ecosystems and the long-term sustainability of deep-sea fish stocks, UN Doc.A/71/351, 22 August 2016. See L. Buhl-Mortensen, F. Neat, M. Koen-Alonso, C. Hvingel and B. Holte, ‘Fishing Impacts on Benthic Ecosystems: An Introduction to the 2014 ICES Symposium’, 73 *ICES Journal of Marine Science* 1 (2016).

exploit the resources of its continental shelf also beyond the limits of the EEZ, although this is limited to 'living organisms belonging to sedentary species' (Article 77). Under this regime, exploitation of non-sedentary species over the continental shelf beyond 200 nautical miles from the baseline is part of the freedom to fish on the high seas established in Article 87 of the Convention, subject to the conservation and cooperation requirements established in Part V and Part VII(2) and to the general obligation 'to protect and preserve the marine environment' set out in Article 192. The 1995 Fish Stocks Agreement implements and develops these provisions in light of the precautionary and ecosystem approaches, among other measures.⁷⁰¹

The Conference of the Parties to the Convention on Biological Diversity did not make a special reference to deep-sea ecosystems and bottom fishing in its programme of action arising from the Jakarta Mandate. However, in its review of the implementation of the programme of work on protected areas for the period 2004–6, the eighth meeting of the Conference of the Parties expressed its 'deep concern' over the threats to marine biodiversity beyond national jurisdiction, in particular to seamounts, cold water coral reefs and hydrothermal vents, as a result of destructive fishing practices, including bottom trawling.⁷⁰² In 2010, the tenth meeting of the Conference of the Parties called on high seas fishing nations to 'fully and effectively implement' General Assembly Resolution 64/72 (discussed below), and not to authorise bottom-fishing activities until such measures have been adopted and implemented.⁷⁰³

Resolutions of the UN General Assembly

In the face of growing concerns over deep-sea fisheries and their potential for considerable destructive impact, the UN General Assembly has considered the issue. Since 2004, it has adopted resolutions that have urged improvements in the protection of deep-sea ecosystems. In Resolution 59/25, the General Assembly called upon states to 'take action urgently' and consider

the interim prohibition of destructive fishing practices, including bottom trawling that has adverse impacts on vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals located beyond national jurisdiction, until such time as appropriate conservation and management measures have been adopted in accordance with international law.⁷⁰⁴

It also called upon members of RFMOs with no competence over bottom fisheries to expand their competence in this regard.

Despite these efforts, a 2006 report from the UN Secretary General concluded that little action had been taken to protect deep-sea ecosystems on the high seas from the adverse impacts of bottom fisheries.⁷⁰⁵ Following calls from several countries, the General Assembly adopted in the

⁷⁰¹ See Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems*, 67–70; K. Tetzlaff, 'Bottom Trawling on the High Seas: Protection under International Law from Negative Effects?', *New Zealand Journal of Environmental Law* 239 (2005); C. R. Taylor, 'Fishing with a Bulldozer: Options for Unilateral Action by the United States under Domestic and International Law to Halt Destructive Bottom Trawling Practices on the High Seas', 34 *Environs: Environmental Law and Policy Journal* 121 (2010).

⁷⁰² Decision VIII/24 (2006). ⁷⁰³ Decision X/29, para. 54.

⁷⁰⁴ UNGA Res. 59/25 (2004), para. 66. See also paras. 67–9.

⁷⁰⁵ *Impacts of Fishing on Vulnerable Marine Ecosystems: Actions Taken by States and Regional Fisheries Management Organizations and Arrangements to Give Effect to Paragraphs 66 to 69 of General Assembly Resolution 59/25 on*

same year Resolution 61/105. This resolution, adopted by consensus, sets time-bound and concrete objectives for states, and particularly for RFMOs with competence, to regulate bottom fisheries. In particular, RFMOs are required to adopt and implement measures in accordance with the precautionary approach, the ecosystem approach and international law:

- (a) to assess, on the basis of the best available scientific information, whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, and to ensure that if it is assessed that these activities would have significant adverse impacts, they are managed to prevent such impacts, or not authorised to proceed;
- (b) to identify vulnerable marine ecosystems and determine whether bottom fishing activities would cause significant adverse impacts to such ecosystems and the long-term sustainability of deep sea fish stocks, *inter alia*, by improving scientific research and data collection and sharing, and through new and exploratory fisheries;
- (c) in respect of areas where vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals, are known to occur or are likely to occur based on the best available scientific information, to close such areas to bottom fishing and ensure that such activities do not proceed unless conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems;
- (d) to require members of the regional fisheries management organisations or arrangements to require vessels flying their flag to cease bottom fishing activities in areas where, in the course of fishing operations, vulnerable marine ecosystems are encountered, and to report the encounter so that appropriate measures can be adopted in respect of the relevant site.⁷⁰⁶

In 2009, the UN General Assembly adopted Resolution 64/72, which called for the better implementation of Resolution 61/105 and introduced some additional requirements.⁷⁰⁷

These resolutions have had a noticeable impact on the development of measures to protect deep-sea ecosystems, particularly vulnerable marine ecosystems, and to regulate bottom fishing. A number of RFMOs have taken measures to 'implement' these resolutions. According to the Secretary General's 2016 report assessing such implementation, and to a further independent assessment, key achievements since the adoption of Resolutions 61/105 and 64/72 include:

- the establishment and entry into force of three new agreements establishing RFMOs to manage high seas bottom fisheries in the North Pacific, South Pacific and Southern Indian Ocean;
- closure of substantial areas of the high seas at fishable depths to bottom fishing by the North East Atlantic Fisheries Commission (NEAFC), the Northwest Atlantic Fisheries Organization (NAFO) and the South East Atlantic Fisheries Organisation (SEAFO), including a number of areas where vulnerable marine ecosystems (VMEs) are known to occur;
- adoption of domestic measures by the states involved in negotiating the new North Pacific Fisheries Commission (NPFC) and adoption of regulations by the South Pacific RFMO (SPRFMO) restricting bottom fishing on the high seas in these regions to a historic fisheries footprint unless

Sustainable Fisheries, Regarding the Impacts of Fishing on Vulnerable Marine Ecosystems, Report of the Secretary General, UN. Doc. A/61/154 (2006).

⁷⁰⁶ Para. 83. See also paras. 84–9.

⁷⁰⁷ UNGA Res. 64/72, paras. 119–20. See also UN Doc. A/RES/66/68, 28 March 2012.

a prior impact assessment is conducted to allow vessels to bottom fish outside of the footprint; and

- a prohibition on bottom trawling issued by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) on the high seas in the Southern Ocean. The General Fisheries Commission of the Mediterranean (GFCM) has also prohibited bottom trawling below 1,000 metres. Several RFMOs have established bans on the use of bottom gillnets in their regulatory areas.⁷⁰⁸

In 2016 the European Union adopted measures to bring deep-sea fishing rules in line with its own Common Fisheries Policy and closer to the standards set in the UN General Assembly Resolutions.⁷⁰⁹

Food and Agriculture Organization

The FAO has contributed in recent years to improving the understanding of deep-sea fisheries, and, in 2010, provided the first review of the state of bottom fisheries worldwide, which highlighted the existence of numerous information and reporting gaps.⁷¹⁰ In 2008, it adopted the International Guidelines for the Management of Deep-Sea Fisheries in the High Seas.⁷¹¹ The Guidelines were negotiated by FAO members and followed a series of expert consultations.⁷¹² They are applicable to fisheries where the total catch includes species that can only sustain low exploitation rates; and where the fishing gear is likely to contact the seafloor during the normal course of fishing operations. Guided by the precautionary and ecosystem approaches, the Guidelines provide a number of management considerations and steps, most notably the need to adopt conservation and management measures for deep-sea resources and to identify vulnerable marine ecosystems.⁷¹³

Marine Protected Areas

There are about 217,000 designated protected areas in the world. Of these, around 14,688 are marine protected areas (MPAs).⁷¹⁴ In 2013, 9.7 per cent of the world's territorial seas were

⁷⁰⁸ Report of the Secretary General (2016) (see n. 579); M. Gianni, S. Fuller, D. E. J. Currie, K. Schleit, B. Pike, L. Goldsworthy, B. Weeber, S. Owen and A. Friedman, *How Much Longer Will It Take? A Ten-Year Review of the Implementation of United Nations General Assembly Resolutions 61/105, 64/72 and 66/68 on the Management of Bottom Fisheries in Areas beyond National Jurisdiction* (Deep Sea Conservation Coalition, 2016).

⁷⁰⁹ Regulation (EU) 2016/2336 of the European Parliament and of the Council of 14 December 2016 establishing specific conditions for fishing for deep-sea stocks in the north-east Atlantic and provisions for fishing in international waters of the north-east Atlantic and repealing Council Regulation (EC) No 2347/2002, OJ L 354, 23.12.2016, pp. 1–19.

⁷¹⁰ A. Bensch, M. Gianni, D. Gréboval, J. S. Sanders and A. Hjort, *Worldwide Review of Bottom Fisheries in the High Seas*, FAO Fisheries and Aquaculture Technical Paper No. 522, Rev.1 (2009). This report reviews, on a regional basis, the status of deep-sea stocks, the impacts of deep-sea fisheries on vulnerable marine ecosystems (VMEs), and the conservation and management measures adopted by RFMOs on these fisheries.

⁷¹¹ See www.fao.org/docrep/011/i0816t/i0816t00.htm

⁷¹² Expert Consultation on Deep-Sea Fisheries in the High Seas (Bangkok, Thailand, 21–23 November 2006); Workshop on Vulnerable Ecosystems and Destructive Fishing in Deep-Sea Fisheries (Rome, 26–29 June 2007); Expert Consultation on International Guidelines for the Management of Deep-Sea Fisheries in the High Seas (Bangkok, Thailand, 11–14 September 2007); Workshop on Knowledge and Data on Deep-Sea Fisheries in the High Seas (Rome, 5–8 November 2007); Skippers and Fleet Managers Workshop on the International Guidelines (Cape Town, South Africa, 25–29 May 2008), which discussed the trawl industry.

⁷¹³ Para. 22.

⁷¹⁴ See UNEP-WCMC and IUCN, *Protected Planet Report* (2016), 7. See also World Database on Protected Areas, www.protectedplanet.net

protected by nationally designated protected areas, 5.3 per cent of the EEZs, and 0.14 per cent of the high seas. Overall, according to 2016 data, 4.1 per cent of the world's oceans is under some form of protection.⁷¹⁵

The year 2016 saw the designation of vast areas of the ocean as MPAs, nearly doubling the global percentage of marine protected areas within a short time. CCAMLR established a protected area of 1.55 million square kilometres in the Ross Sea, one of the few substantially unaltered large marine ecosystems left on the planet.⁷¹⁶ This new marine protected area is the largest in the world, with a 72 per cent 'no-take' zone, and one of the few MPAs established on the high seas. Earlier in 2016, former US President Obama quadrupled the size of the Papahānaumokuākea Marine National Monument, within the EEZ of the United States, expanding it to nearly 1.5 million square kilometres.⁷¹⁷

There is no single definition of a 'marine protected area' (MPA) in international law, although a commonly accepted notion is provided by the Convention on Biological Diversity:

any defined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings.⁷¹⁸

For some, the notion of an MPA also encompasses other forms of protection, such as spatial and temporal closures established for fisheries management. MPAs may be regulated in many different ways: for example, some MPAs are set up whereby the water column is protected, vertically, instead of over a horizontally defined area.⁷¹⁹

Support for establishing MPAs stems from reasons similar to those that justify terrestrial protected areas. If properly designed and managed, MPAs can help protect, recover and maintain fish stocks, ecosystem resilience, habitat structure and biological diversity.⁷²⁰ The 2002 Johannesburg Plan of Implementation called upon states to establish marine protected areas 'consistent with international law and based on scientific information', and to achieve representative networks of marine protected areas by 2012.⁷²¹ This was reiterated in 2004 by the Conference of

⁷¹⁵ United Nations, The Millennium Development Goals Report 2013, 45; World Database on Protected Areas (as of March 2017).

⁷¹⁶ CCAMLR, Report of the Thirty-Fifth Meeting of the Commission, 17–28 October 2016, para. 8.37.

⁷¹⁷ obamawhitehouse.archives.gov/the-press-office/2016/08/26/presidential-proclamation-papahanaumokuakea-marine-national-monument

⁷¹⁸ Decision VII/5, note 11.

⁷¹⁹ See K. Gjerde, 'High Seas Marine Protected Areas and Deep-Sea Fishing', Paper for the Expert Consultation on Deep-Sea Fisheries in the High Seas (2006), 141 and 143–4.

⁷²⁰ Gjerde, 'High Seas Marine Protected Areas and Deep-Sea Fishing', 141. The seventh Conference of the Parties to the Convention on Biological Diversity noted that marine and coastal protected areas have been proven to contribute to: (a) protecting biodiversity; (b) sustainable use of components of biodiversity; and (c) managing conflict, enhancing economic well-being and improving the quality of life: Decision VII/5. There are also views that consider that the establishment of MPAs needs to integrate social, economic and institutional dimensions to make them viable. Some other commentators consider it necessary to strengthen the scientific basis for the selection and design of MPAs, to monitor and evaluate the effectiveness of MPAs, and to study their effects in contrast to or in combination with other management tools. See generally the papers published in a special issue on MPAs, 66 *ICES Journal of Marine Science* (2009).

⁷²¹ Plan of Implementation, para. 32(c).

the Parties to the Convention on Biological Diversity, and again in 2006 and 2008.⁷²² As mentioned above, the objective to protect 10 per cent of coastal and marine areas set in the 2010 Aichi Biodiversity Targets has been recalled in subsequent international plans, such as the 2012 Rio+20 summit outcome document and the 2015 Sustainable Development Goals. The regulation of MPAs under international law differs for areas established under national jurisdiction, namely within a state's EEZ, and for areas beyond national jurisdiction. A number of regional agreements foresee the establishment of MPAs both under state jurisdiction and on the high seas.⁷²³

Marine Protected Areas Under National Jurisdiction

UNCLOS does not refer expressly to MPAs as a means to protect and preserve the marine environment or conserve marine living resources. However, a coastal state may designate MPAs within its territorial sea, as part of its sovereign rights established in Part II, or within its EEZ, in the exercise of its rights and obligations to conserve and manage natural resources established in Part V of the Convention. In fact, the number of MPAs designated within territorial waters has accelerated since 2003; within EEZs, the number has increased but much less significantly. Overall, more than 90 per cent of MPAs are designated within the territorial sea and the EEZ.⁷²⁴

The right to so designate is, however, subject to the requirements of UNCLOS, and a coastal state must have due regard to the rights and duties of other states.⁷²⁵ In 2010, the case brought by Mauritius against the United Kingdom concerning the Chagos Archipelago addressed this matter, as among other issues, Mauritius contended that the setting up of an MPA by the United Kingdom impinged upon its fishing and other rights, under UNCLOS.

Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom)

The case concerned the establishment of an MPA in the Chagos Archipelago, in the Indian Ocean, which purported to extend over one-quarter-million square miles, up to the outer limit of the EEZ, and sought to ban all forms of fishing in the area. It was at the time the largest 'no-take' MPA in the world.⁷²⁶ The dispute was set in the context of Mauritius' claim of sovereignty over the Chagos Archipelago, which in colonial times had been under British rule. In 1965, the United Kingdom detached this archipelago from the colony of Mauritius and purported to establish the 'British Indian Ocean Territory' (BIOT), including a military base on Diego Garcia. Mauritius contended that dismemberment by the United Kingdom of the territory of Mauritius in 1965 was carried out in violation of international laws relating to decolonisation. Also relevant to the case was the eviction by 1973 of the entire local population of the islands, without a right of return to the Chagos Archipelago.⁷²⁷

⁷²² Decisions VII/5 and VII/28 (2004); Decision VIII/24 (2006); Decision IX/18 (2008). See also *Programme of Work on Protected Areas* (2004).

⁷²³ See e.g. the network of MPAs under the Barcelona and OSPAR Conventions.

⁷²⁴ H. L. Thomas et al., 'Evaluating Official Marine Protected Area Coverage for Aichi Target 11: Appraising the Data and Methods that Define Our Progress', 24(2) *Aquatic Conservation* 8 (2014), fig. 4.

⁷²⁵ Article 56(2), UNCLOS.

⁷²⁶ *Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom)*, PCA Case number 2011-03, at www.pccases.com/web/view/11

⁷²⁷ The Chagos Islanders brought a case against the United Kingdom before the European Court of Human Rights alleging the violation of fundamental rights as a result of their removal from the islands and related actions. On 11 December

On 20 December 2010, Mauritius instituted arbitral proceedings against the United Kingdom under Article 287 of UNCLOS. Mauritius submitted to the Tribunal that the designation of the MPA by the United Kingdom was contrary to UNCLOS because the United Kingdom was not a coastal state within the meaning of UNCLOS. In addition, Mauritius disputed whether the United Kingdom would have acted in any event in accordance with its rights and obligations as a coastal state under UNCLOS. It contended, in its fourth submission to the Tribunal, that:

the purported 'MPA' is incompatible with the substantive and procedural obligations of the United Kingdom under the Convention, including inter alia Articles 2, 55, 56, 63, 64, 194 and 300, as well as Article 7 of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks of 4 August 1995.⁷²⁸

The Tribunal delivered its award on 18 March 2015. It held that it had no jurisdiction to consider whether the United Kingdom or Mauritius had the rights of a coastal state regarding the Chagos Archipelago, but was competent to consider the merits of Mauritius' fourth submission. The Tribunal ruled that in creating the MPA by unilateral declaration the United Kingdom had failed to take into account legitimate interests of Mauritius, also considering its reversionary title to sovereignty, and found that the United Kingdom had thereby breached its obligations under Articles 2(3), 56(2), and 194(4) of UNCLOS,⁷²⁹ particularly considering Mauritian fishing rights in the territorial sea of the Chagos Archipelago.

Of particular relevance to the interpretation of the rules of UNCLOS on the protection of the marine environment are the Tribunal's rulings on Article 194: First, the Tribunal accepted Article 194 as a basis for adopting MPAs, stating:

Article 194 is not limited to measures aimed strictly at controlling pollution and extends to measures focussed primarily on conservation and the preservation of ecosystems.⁷³⁰

Second, the Tribunal considered that when establishing the MPA there was a need to balance the rights of states with different interests at stake, and offered some criteria to this end. The Tribunal ruled that Article 194(4):

2012, the Court declared the application inadmissible, mainly under the consideration that the islanders had already received compensation for those same facts, and thereby renounced bringing any further claims. European Court of Human Rights, *Chagos Islanders v. United Kingdom*, App. No. 35622/04, Decision 11 December 2012.

⁷²⁸ *Chagos Marine Protected Area Arbitration*, para. 158.

⁷²⁹ D. A. Colson and B. J. Vohrer, 'In re *Chagos Marine Protected Area (Mauritius v. United Kingdom)*', 109(4) *American Journal of International Law* 845 (2015).

⁷³⁰ *Chagos Marine Protected Area Arbitration*, paras. 537–8. The Tribunal was guided in this interpretation by the Art. 194(5), which reads: 'the measures taken in accordance with this Part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life'.

requires a balancing act between competing rights, based upon an evaluation of the extent of the interference, the availability of alternatives, and the importance of the rights and policies at issue.⁷³¹

Third, the Tribunal did not exclude the possibility that ‘environmental considerations could potentially justify, for the purposes of Article 194(4), the infringement of Mauritian fishing rights in the territorial sea’. However, according to the Tribunal, such justification would require significant engagement with Mauritius ‘to explain the need for the measure and to explore less restrictive alternatives’, and no such engagement had taken place.⁷³²

MPAs in Areas Beyond National Jurisdiction

With regard to establishing MPAs on the high seas, the basic legal framework is provided by the rules of UNCLOS on the freedoms of the high seas, in combination with the general duty to protect and preserve the marine environment, including the provisions of Article 194, which refer to the protection and preservation of rare or fragile ecosystems; the obligation for states to cooperate, globally or regionally, to these ends, including in the conservation and management of shared living resources; and the provisions of Part XI of UNCLOS on the Area, in particular Article 145(b).

Essentially, there is no legal impediment to establishing MPAs on the high seas. The real challenge lies in reconciling the interests of states supporting the establishment of a protected area with those of states that prefer to make other legal uses of that area. In fact, where global or regional organisations have the competence to establish protected areas they have already done so (or begun the preparatory work to do so).⁷³³ Some of the principal developments in this regard include:

- establishment of areas closed to fishing by RFMOs,⁷³⁴ and of whale sanctuaries by the IWC⁷³⁵ and of cetaceans by the parties to the Barcelona Convention;⁷³⁶
- identification and protection of ‘vulnerable marine ecosystems’, as described above with regard to bottom fishing, by RFMOs;⁷³⁷
- development of a rationale and recommendations for the establishment of ‘areas of particular environmental interest’ in the Clarion-Clipperton Zone in the Central Pacific, under the

⁷³¹ *Ibid.*, para. 540. The Tribunal made similar findings for Article 56(2), the obligations of which are considered to be ‘functionally equivalent’ to those set in Article 194(4).

⁷³² *Ibid.*, para. 541.

⁷³³ See E. J. Molenaar and A-G. Oude Elferink, ‘Marine Protected Areas in Areas Beyond National Jurisdiction: The Pioneering Efforts under the OSPAR Convention’, 5 *Utrecht Law Review* 5 (2009).

⁷³⁴ See the examples of geographically specific high seas protection measures established by RFMOs and other arrangements in J. Ardron, K. Gjerde, S. Pullen and V. Tilot, ‘Marine Spatial Planning in the High Seas’, 32 *Marine Policy* 832 (2008).

⁷³⁵ See pp. 535–6. See also R. S. Abate, ‘Marine Protected Areas as a Mechanism to Promote Marine Mammal Conservation: International and Comparative Law Lessons for the United States’, 88 *Oregon Law Review* 255 (2009).

⁷³⁶ Inscription in 2001 of the Pelagos Sanctuary for Mediterranean Cetaceans in the List of the Specially Protected Areas of Mediterranean Importance (SPAMIs). See G. Notarbartolo di Sciara, T. Agardy, D. Hyrenbach, T. Scovazzi and P. Van Klaveren, ‘The Pelagos Sanctuary for Mediterranean Marine Mammals’, 18 *Aquatic Conservation: Marine and Freshwater Ecosystem* 367 (2008).

⁷³⁷ e.g. NEAFC closed areas between 2009 and 2015 to bottom fisheries on the Mid-Atlantic Ridge to protect vulnerable marine ecosystems in the high seas of the Northeast Atlantic.

International Seabed Authority and adoption of a management plan for the Clarion-Clipperton Zone;⁷³⁸ and

- designation of 'particularly sensitive sea areas' (PSSAs) under the IMO.⁷³⁹

The greater challenge concerns the establishment of 'integrated, multi-sectoral and multi-purpose'⁷⁴⁰ MPAs on the high seas, which require high levels of international coordination and a delicate balance of states' interests. One step in this direction was taken by CCAMLR in 2009, with the designation of an MPA around the South Orkney Islands.⁷⁴¹ In 2016, the designation by CCAMLR of a 1.55-million square kilometres protected area in the Ross Sea – the largest in the world, and fifteen times as large as the South Orkney Islands MPA – offered an unprecedented example of international cooperation for the conservation of marine biodiversity. However, greater complexity arises when different international bodies and individual state interests need to converge in a specific geographical area. OSPAR has led on efforts in this regard through its network of representative MPAs, which has resulted in the designation of seven MPAs in areas beyond national jurisdiction.⁷⁴² OSPAR has developed a 'Collective Arrangement' framework to articulate cooperation between different international organisations, such as NEAFC, the IWC, the IMO and the International Seabed Authority, which has so far resulted in a first Arrangement with NEAFC in 2014.⁷⁴³ Despite progress, OSPAR itself acknowledges that its network of MPAs cannot yet be regarded as 'well-managed', particularly due to the lack of sufficient data and the need to develop adequate management plans.⁷⁴⁴

Commentators have identified multiple gaps in the current international legal regime for the conservation of marine biological diversity in areas beyond national jurisdiction, noting that the existing system lacks the common goals, principles, multisectoral coordination, geographic coverage and accountability frameworks needed to ensure comprehensive conservation and enforcement.⁷⁴⁵ A decade before, diverse calls for action resulted in the General Assembly

⁷³⁸ See e.g. International Seabed Authority, *Rationale and Recommendations for the Establishment of 'Preservation Reference Areas' for Nodule Mining in the Clarion-Clipperton Zone*, ISA Doc. ISBA/14/LTC/2, 28 March 2008; Proposal for the designation of certain geographical areas in the Clarion-Clipperton Fracture Zone, ISBA/15/LTC/4, 11 March 2009. See M. Lodge et al., 'Seabed Mining: International Seabed Authority Environmental Management Plan for the Clarion-Clipperton Zone: A Partnership Approach', 49 *Marine Policy* 66 (2014).

⁷³⁹ The IMO has designated PSSAs since 1990, where special protective measures are applied. In 2005, the IMO adopted revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (PSSAs) (Res. A.982(24)). See H. Lefebvre-Chalain, 'Fifteen Years of Particularly Sensitive Sea Areas: A Concept in Development', 13 *Ocean and Coastal Law Journal* 47 (2007); K. Gjerde and D. Freestone, 'Particularly Sensitive Sea Areas', 9 *International Journal of Marine and Coastal Law* 431 (1994) (special issue); M. Kachel, *Particularly Sensitive Sea Areas: The IMO's Role in Protecting Vulnerable Marine Areas* (Berlin: Springer, 2008).

⁷⁴⁰ E. J. Molenaar and A.-G. Oude Elferink, 'Marine Protected Areas in Areas Beyond National Jurisdiction: The Pioneering Efforts under the OSPAR Convention', 5 *Utrecht Law Review* 5 (2009), 7.

⁷⁴¹ CCAMLR, Conservation Measure 91-03 (2009), Protection of the South Orkney Islands Southern Shelf. It prohibits all forms of fishing (except scientific fishing), as well as dumping and discharges from vessels. Vessel traffic is restricted.

⁷⁴² See 1998 Sintra Declaration, where OSPAR Ministers committed to promoting the establishment of a network of MPAs; OSPAR Recommendation 2003/3 on a network of marine protected areas.

⁷⁴³ OSPAR Agreement 2014-09. See generally OSPAR, *2014 Status Report on the OSPAR Network of Marine Protected Areas* (2014), 38.

⁷⁴⁴ *2014 Status Report*, 5.

⁷⁴⁵ K. M. Gjerde et al., 'Protecting Earth's Last Conservation Frontier: Scientific, Management and Legal Priorities for MPAs beyond National Boundaries', 26(2) *Aquatic Conservation* 45 (2016), 47-8; K. M. Gjerde, *Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas Beyond National Jurisdiction* (IUCN, 2008).

establishing in 2005 the 'Ad Hoc Open-Ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction', with the objective to improve understanding on these issues and promote international cooperation.⁷⁴⁶

At the Rio+20 Summit, states committed to address urgently the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction, and agreed to decide by September 2015 on the development of an international instrument under UNCLOS.⁷⁴⁷ In 2015, the UN General Assembly agreed to develop 'an internationally legally binding instrument under the United Nations convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction'.⁷⁴⁸

Both the form (binding or non-binding) and the content of this instrument have proved contentious issues. An agreement was reached in 2011, where it was determined that an international legally binding instrument would address the following issues, 'in particular, together and as a whole'.⁷⁴⁹

- marine genetic resources, including questions on the sharing of benefits;⁷⁵⁰
- measures such as area-based management tools, including marine protected areas;
- environmental impact assessments; and
- capacity-building and the transfer of marine technology.

CONCLUSIONS

International law for the protection of the oceans and its resources covers large substantive areas of regulation, principally measures against pollution and for fisheries management. States have also taken steps to regulate the protection of marine species and habitats, as a result of increased awareness about their vulnerability to pollution, overfishing and destructive practices. UNCLOS, although fragmented and incomplete, has proven to be sufficiently flexible to allow important developments in ocean law in the past few decades. Existing international organisations such as the FAO and the IMO have expanded their activities in the field of ocean conservation; numerous regional bodies, competent over fisheries or over pollution-abatement, have proliferated; and international cooperation has generally increased. Particularly since UNCED, and more notably since the 2002 WSSD, states when addressing ocean protection have relied on principles of international environmental law, such as the precautionary principle, the ecosystem approach, the polluter pays principle and access to environmental information.

⁷⁴⁶ UNGA Res. 59/24 (2005), para. 73. ⁷⁴⁷ *Future We Want*, para. 162. ⁷⁴⁸ UNGA Res. 69/292, 6 July 2015.

⁷⁴⁹ UN Doc. A/66/119 (2011), Letter from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly, Annex. See also Chair's non-paper on elements of a draft text of an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, 28 February 2017, at www.un.org/depts/los/biodiversity/prepcom_files/Chair_non_paper.pdf. See also Report of the Secretary General in support of MPAs: 'Marine areas beyond national jurisdiction need to be carefully managed and monitored for their health and wealth in natural resources and rich biodiversity' (*Oceans and the Law of the Sea: Report of the Secretary General, Addendum*, UN Doc. A/66/70/Add.1, 11 April 2011, para. 310; S. Hart, *Elements of a Possible Implementation Agreement to UNCLOS for the Conservation and Sustainable Use of Marine Biodiversity in Areas Beyond National Jurisdiction*, IUCN Environmental Policy and Law Papers online, Marine Series No. 4 (2008).

⁷⁵⁰ See Chapter 10, pp. 394–6.

However, these developments have not prevented the further deterioration of the oceans, the over-exploitation or depletion of marine species and the destruction of natural marine habitats. Scientists acknowledge the uncertainties surrounding predictions of future impacts from human activities on the marine environment, particularly as a result of climate change, but emphasise the importance of considering the cumulative threats posed by the combined effect of individual ocean stressors. This situation may require states to review their previous practices and search for new solutions. First steps could be taken by implementing principles of modern ocean governance more broadly than they have been until now,⁷⁵¹ particularly by RFMOs, which have been generally unsuccessful in fulfilling their mandate. At present, the precautionary approach and the ecosystem approach have been incorporated mainly in agreements adopted, or revised, after 2002. Implementation of these principles also needs to be translated into practical action and not be limited to their formal recognition. In addition, there is a generalised need for improvement in compliance with existing agreements and measures, including the establishment of strong, independent scientific and technical bodies and a well-funded and active secretariat. This needs to be coupled with greater accountability of states and international organisations, which until now have faced limited responsibility for their failures.

There are also important regulatory gaps in ocean governance that need to be addressed, most notably concerning the protection of marine biodiversity beyond areas of national jurisdiction. The decision in 2015 by the UN General Assembly to negotiate a new UNCLOS implementing agreement on the matter is an important step. However, states face the challenge of reconciling differing views on access to genetic resources in areas beyond national jurisdiction, and, more generally, to devise a holistic management approach for the oceans. In addition to more and better regulation and implementation, more fundamental rethinking of the current regime for the protection of the oceans may be required. UNCLOS provided the greatest enclosure of ocean spaces ever,⁷⁵² but the assumption that the establishment of EEZs would lead to better management of marine resources has generally not been proven right. At the same time, the freedom to fish on the high seas, even if increasingly limited by the principles introduced by the 1995 Fish Stocks Agreement and by international cooperation efforts through RFMOs, has resulted in a situation not so distant from the one predicted by Hardin's 'tragedy of the commons'.⁷⁵³

A change is needed in international law that can effectively balance sovereign rights, within and beyond national jurisdiction, with the common interest of humankind to protect and preserve the marine environment, particularly considering that oceans are one of the Earth's principal providers of ecological services. International law needs to be able to respond to the ever-increasing complexity of environmental problems affecting the oceans with holistic solutions, which rest on the implementation of an ecosystem approach as the scientific underpinning, and on the notion of integrated management as its policy response. But to take this integrated approach to the global level, some additional regulatory efforts are required. Some, perhaps accepting the impossibility of restricting the rights of coastal states, focus on high seas governance and suggest the need for a more 'communitarian' approach to high seas

⁷⁵¹ On the development of a catalogue of principles of modern ocean governance, see D. Freestone, 'Principles Applicable to Modern Oceans Governance', 23 *International Journal of Marine and Coastal Law* 385 at 390-1 (2008).

⁷⁵² P. Bernal, 'For the Ocean', in G. Holland and D. Pugh (eds.), *Troubled Waters: Ocean Science and Governance* (Cambridge: Cambridge University Press, 2010), 17-18.

⁷⁵³ G. Hardin, 'The Tragedy of the Commons', 162 *Science* 1243 (1968).

regulation.⁷⁵⁴ But the oceans are more than the high seas, and the duty of states to cooperate, not to cause damage to areas (or species) beyond national jurisdiction, and to protect and preserve the marine environment, as required by UNCLOS, apply also to coastal states. A connecting thread needs to be woven through all previously disconnected areas of regulation, overcoming some of the initial fragmentation created by UNCLOS when addressing the protection of the marine environment and its resources. Efforts in this direction have begun, particularly at the regional level, but there is much still uncharted territory.

FURTHER READING

The literature on international environmental regulation of oceans and marine living resources is vast. The following are a selection of key resources relevant to each of the main topic areas covered in the chapter: marine pollution, conservation of marine living resources, including fisheries, and conservation of marine biodiversity and ecosystems.

General resources on the law of the sea:

- M. H. Nordquist, S. Rosenne, A. Yancov and N. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary*, vol. IV, Articles 192 to 278, Final Act, Annex VI (Leiden: Brill/Nijhoff, 1991);
 R. Churchill and A. Lowe, *The Law of the Sea* (Manchester: Manchester University Press, 1999, 3rd edn);
 D. Caron and H. N. Scheiber (eds.), *Bringing New Law to Ocean Waters* (Leiden: Martinus Nijhoff, 2004);
 L. Sohn and J. Noyes, *Cases and Materials on the Law of the Sea* (Dobbs Ferry, NY: Transnational, 2004);
 M. Gavouneli and N. Skourtos (eds.), *Unresolved Issues and New Challenges to the Law of the Sea: Time Before and Time After* (Leiden: Martinus Nijhoff, 2006);
 Jean-Pierre Beurier (ed.), *Droits Maritimes* (Paris: Dalloz, 2006);
 D. Freestone, R. Barnes and D. Ong (eds.), *The Law of the Sea, Progress and Prospects* (Oxford: Oxford University Press, 2006);
 N. Malick Tafsir and R. Wolfrum (eds.), *Law of the Sea, Environmental Law and Settlement of Disputes* (Leiden: Martinus Nijhoff, 2007);
 D. Anderson, *Modern Law of the Sea: Selected Essays* (Leiden: Martinus Nijhoff, 2008);
 D. König, 'Marine Environment, International Protection', *Max Planck Encyclopedia of Public International Law – Marine Environment, International Protection* (2011);
 J. Harrison, *Making the Law of the Sea: A Study in the Development of International Law* (Cambridge: Cambridge University Press, 2011);
 Y. Tanaka, *The International Law of the Sea* (Cambridge: Cambridge University Press, 2012);
 N. Oral, '1982 UNCLOS +30: Confronting New Complexities in the Protection of Biodiversity and Marine Living Resources in the High Seas', 106 *American Society of International Law Proceedings* 403 (2012);
 Y. Shunji, 'Can the UNCLOS Address Challenges of the 21st Century', 57 *German Yearbook of International Law* 43 (2014);
 R. Wolfrum, 'Evolution of the Law of the Sea from an Institutional Perspective', 57 *German Yearbook of International Law* 95 (2014);
 D. R. Rothwell, A. G. Oude, Elferink, K. N. Scott and T. Stephens (eds.), *The Oxford Handbook of the Law of the Sea* (Oxford: Oxford University Press, 2015);

⁷⁵⁴ R. Rayfuse and R. Warner, 'Securing a Sustainable Future for the Oceans Beyond National Jurisdiction: The Legal Basis for an Integrated Cross-Sectoral Regime for High Seas Governance for the 21st Century', 23 *International Journal of Marine and Coastal Law* 399 (2008). The article explores the applicability of the notion of 'common heritage of mankind', and of trusteeship as the legal basis for a new approach to high seas governance.

R. Rayfuse (ed.), *Research Handbook on International Marine Environmental Law* (Cheltenham, UK: Edward Elgar, 2015);

D. H. Rothwell and T. Stephens, *The International Law of the Sea* (Portland, OR/Oxford: Hart, 2016, 2nd edn).

Protection of the marine environment – marine pollution:

L. Caflisch, 'International Law and Ocean Pollution: The Present and the Future', 8 *RBDI* 7 (1972);

R. Johnson (ed.), *Marine Pollution* (London: Academic Press, 1976);

R. Soni, *Control of Marine Pollution in International Law* (1985);

E. Boyle, 'Marine Pollution under the Law of the Sea Convention', 79 *American Journal of International Law* 347 (1985);

L. A. Kimball, *International Ocean Governance: Using International Law and Organizations to Manage Marine Resources Sustainability* (2003);

J. Basedow and U. Magnus (eds.), 'Pollution of the Sea – Prevention and Compensation', 10 *Hamburg Studies on Maritime Affairs* (2007);

T. J. Burns, 'Marine Pollution', *The Wiley-Blackwell Encyclopedia of Globalization* (2016).

Conservation of marine living resources:

D. M. Johnston, *The International Law of Fisheries: A Framework for Policy Oriented Enquiries* (New Haven, CT: Yale University Press, 1965);

E. Hey, *The Regime for the Exploitation of Transboundary Marine Fisheries Resources: The United Nations Law of the Sea Convention* (Leiden: Martinus Nijhoff, 1989);

W. T. Burke, *The New International Law of Fisheries: UNCLOS 1982 and Beyond* (Oxford: Clarendon Press, 1994);

M. Hayashi, 'The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention', 29 *Ocean and Coastal Management* 51 (1995);

D. Momtaz, 'L'Accord Relatif à la Conservation et la Gestion des Stocks Chévauchants et Grands Migrateurs', *Annuaire Français de Droit International* 676 (1995);

J. de Yturriaga, *The International Regime of Fisheries: From UNCLOS to the Presencial Sea* (The Hague/ London: Martinus Nijhoff, 1997);

F. Orrego Vicuña, *The Changing International Law of High Seas Fisheries* (Cambridge: Cambridge University Press, 1999);

S. Kaye, *International Fisheries Management* (Cambridge: IUCN, 2000);

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E. J. Molenaar, 'Addressing Regulatory Gaps in High Seas Fisheries', 20 *International Journal of Marine and Coastal Law* 533 (2005);

A. Sydenes, 'Regional Fisheries Organisations and International Fisheries Governance', in S. A. Ebbin, A. Hoel and A. Sydenes (eds.), *A Sea Change: The Exclusive Economic Zone and Governance Institutions for Living Marine Resources* (Berlin: Springer, 2005);

A. Willock and M. Lack, *Follow the Leader: Learning from Experience and Best Practice in Regional Fisheries Management Organizations* (WWF, 2006);

G. Winter, *Towards Sustainable Fisheries Law: A Comparative Analysis* (Gland, Switzerland: IUCN, 2009);

J. F. Pulvenis de Séligny, 'The Marine Living Resources and the Evolving Law of the Sea', 1 *Aegean Review of the Law of the Sea* 61 (2010);

M. Tsamenyi and Q. Hanich, 'Fisheries Jurisdiction under the Law of the Sea Convention: Rights and Obligations in Maritime Zones under the Sovereignty of Coastal States', 27 *International Journal of Marine and Coastal Law* 783 (2012);

A. Charles, 'Fisheries Management and Governance: Forces of Change and Inertia', 27 *Ocean Yearbook* 249 (2013);

- O. Spijkers and N. Jevglevskaja, 'Sustainable Development and High Seas Fisheries', 9 *Utrecht Law Review* 24 (2013);
- A. Dieter, 'From Harbor to High Seas: An Argument for Rethinking Fishery Management Systems and Multinational Fishing Treaties', 32 *Wisconsin International Law Journal* 725 (2014).

Conservation of marine biodiversity:

- T. Scovazzi, 'Marine Protected Areas on the High Seas: Some Legal and Policy Considerations', 19 *International Journal of Marine and Coastal Law* 1 (2004);
- E. J. Molenaar, 'Managing Biodiversity in Areas Beyond National Jurisdiction', 22 *International Journal of Marine and Coastal Law* 89 (2007);
- R. Warner, *Protecting the Oceans Beyond National Jurisdiction: Strengthening the International Law Framework* (Leiden: Martinus Nijhoff, 2009);
- D. K. Leary, *International Law and the Genetic Resources of the Deep Sea* (Leiden: Martinus Nijhoff, 2007);
- L. A. de la Fayette, 'A New Regime for the Conservation and Sustainable Use of Marine Biodiversity and Genetic Resources Beyond the Limits of National Jurisdiction', 24 *International Journal of Marine and Coastal Law* 221 (2009);
- E. J. Goodwin, *International Environmental Law and the Conservation of Coral Reefs* (New York: Routledge, 2011);
- G. J. Edgar, 'Does the Global Network of Marine Protected Areas Provide an Adequate Safety Net for Marine Biodiversity?', 21 *Aquatic Conservation: Marine and Freshwater Ecosystems* 313 (2011);
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- Gjerde, Kristina M., 'Challenges to Protecting the Marine Environment beyond National Jurisdiction', 27 *International Journal of Marine and Coastal Law* 839 (2012);
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- T. Scovazzi, 'The Exploitation of Resources of the Deep Seabed and the Protection of the Environment', 57 *German Yearbook of International Law* 181 (2014);
- Y. Kagami, 'Filling Regulatory Gaps in the High Seas Fisheries: Discrete High Seas Fish Stocks, Deep-Sea Fisheries and Vulnerable Marine Ecosystems', 58 *Japanese Yearbook of International Law* 427 (2015).
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- R. Barnes, 'The Proposed LOSC Implementation Agreement on Areas Beyond National Jurisdiction and Its Impact on International Fisheries Law', 31 *International Journal of Marine and Coastal Law* 583 (2016).
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12

Hazardous Substances and Activities, and Waste

CHAPTER OUTLINE

Hazardous substances and activities, as well as wastes generated through industrial processes, present a significant and growing challenge for international regulation. This chapter reviews the international legal rules applicable to the three interrelated areas of:

1. hazardous substances, such as industrial chemicals and pesticides;
2. hazardous activities, such as nuclear energy and mercury mining; and
3. wastes, including municipal, hazardous and radioactive wastes.

While particular international legal regimes exist for certain hazardous activities, such as nuclear energy, the international environmental legal framework for hazardous substances and wastes is piecemeal and fragmented, with an absence of principles and treaties of global application. In respect of these two areas, the chapter therefore takes a functional approach in describing the obligations applicable to different elements of their risk management. For hazardous substances, the rules covered concern:

- definition of hazardous substances;
- accident prevention, preparedness and response;
- aspects of chemicals and pesticides regulation including registration and classification, production and use, and international trade and transport; and
- exposure in the working environment.

For wastes, the following aspects are dealt with:

- definition and classification;
- prevention and treatment;
- disposal, recycling and reuse; and
- international movement, including trade.

INTRODUCTION

International environmental law has tended to regulate specific environmental media and/or resources rather than particular activities or products. There is, however, now a significant body of rules which regulate those activities or products, and associated wastes, considered by the

international community, within a region or globally, to be hazardous or dangerous and to merit specific attention. The Biosafety Protocol, regulating certain categories of genetically modified organisms produced via processes of biotechnology, is one such example considered in previous chapters. The reason for international attention to these substances and activities, and to wastes, lies in their potential for global or transboundary impacts on human health or the environment. For instance, toxic chemicals such as dioxins persist in the environment over long time frames and can be dispersed through air or water over a large area. Equally, activities such as the generation of nuclear energy warrant international regulatory involvement when poor safety practices or accidents result in widespread radioactive contamination. Such activities also generate hazardous wastes, which pose long-term problems of storage and disposal.

As will be seen, both in the case of hazardous substances and activities, and of wastes, there is not presently any single international organisation or treaty that establishes principles and rules of general application. The international community has instead adopted broad policy guidelines. Principle 6 of the 1972 Stockholm Declaration declared that the 'discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems'. According to Principle 14 of the Rio Declaration, 'states should effectively co-operate to discourage or prevent the relocation and transfer to other states of any activities and substances that cause severe environmental degradation or are found to be harmful to human health'.¹ Sustainable Development Goal 12 also indirectly references the issue of hazardous substances and wastes by calling for 'sustainable consumption and production patterns'. One of the associated targets for Goal 12 is to achieve, by 2020, 'the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment'.²

Rules for hazardous substances and wastes developed since the 1972 Stockholm Conference arise from a range of international acts of differing legal qualities, with competence devolved to different international organisations. This has contributed to a certain lack of coherence, and to reactive and fragmented rules which may be difficult to identify or interpret. In the case of hazardous substances and activities, the result is a patchwork of international regulations the applicability of which depends upon the nature and characteristics of a particular substance and the location where it is being manufactured or used. Equally for wastes – which traditionally have been regulated incidentally to the attainment of other objectives – the overall international response has been fragmented, ad hoc and piecemeal. The absence of global rules for either hazardous substances or wastes remains a real problem. Hazardous substances may be easily transportable and do not, as a general matter, distinguish in their damaging effects between different peoples or environments. Likewise, a fragmented approach to waste management fails

¹ The issue of waste was addressed in a more concerted fashion in Agenda 21 with the development of proposals, including targets and timetables, for the management of hazardous wastes (Chapter 20), solid wastes, including sewage (Chapter 21) and radioactive wastes (Chapter 22). In 1997, the UN General Assembly called for the storage, transportation, transboundary movement and disposal of radioactive wastes to be guided by the principles of Agenda 21 and the Rio Declaration: UNGA Res. A/S-19/29, Programme for the Further Implementation of Agenda 21, 19 September 1997, para. 59.

² See www.un.org/sustainabledevelopment/sustainable-consumption-production/#ff87cf62040605d47

to deal with the core problem of preventing waste generation and instead tends to shift the disposal problem from one environmental medium to another. The 2013 Minamata Convention on Mercury represents a step towards a more comprehensive approach that covers emissions and releases of mercury, as well as measures on the environmentally sound interim storage of mercury, on mercury wastes, and contaminated sites.

Notwithstanding the lack of a coherent international framework, industrialised countries have put in place an extensive and complex body of binding legal obligations regarding hazardous substances and activities under domestic law and regional agreements, including EU law and OECD acts. However, the extent to which many of these rules apply to the activities of their registered corporations in developing countries is not clear despite calls for companies to demonstrate a commitment, in respect of toxic chemicals, 'to adopt standards of operation equivalent to or not less stringent than those existing in the country of origin'.³ Moreover, the standards and approaches adopted in domestic law regarding hazardous substances are diverse and often divergent, highlighting the need for multilateral harmonisation efforts to ensure effective control over the production, use and international trade of toxic chemicals. Important developments in this regard include the 'Globally Harmonized System of Classification and Labelling of Chemicals' (GHS)⁴ and the Strategic Approach to International Chemicals Management (SAICM)⁵ established under the auspices of the UN, although national implementation remains a problem.

The area of waste management has also seen several attempts to develop a more comprehensive global regulatory framework, including the 1976 OECD Council Recommendation on a Comprehensive Waste Management Policy,⁶ and UNEP's 1987 Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes.⁷ In 1990, the EU adopted a first Community Strategy for Waste Management to guide waste management policy for member

³ UN GAOR 46th Sess., Agenda Item 21, UN Doc. A/Conf.151/26 (1992) (Agenda 21), para. 19.52(d). On the OECD's guidelines for multinational enterprises, see Chapter 3, p. 84.

⁴ GHS (2015, 6th edn), ST/SG/AC.10/30/Rev.6.

⁵ See www.saicm.org. SAICM was developed by a multistakeholder and multisectoral Preparatory Committee and supports the achievement of the goal agreed at the 2002 WSSD (and affirmed at Rio+20) of ensuring that, by the year 2020, chemicals are produced and used in ways that minimise significant adverse impacts on the environment and human health.

⁶ OECD C(76) 155 Final (1976). This policy recommended that member countries implement waste policies to protect the environment and ensure rational use of energy and resources while taking account of economic constraints. Recommended principles included the need: to take environmental protection into account; to encourage waste prevention; to promote recycling; to use policy instruments; and to ensure access to information (Annex, paras. 2–6). The Recommendation also endorsed administrative arrangements, including: inventories of wastes to be disposed; the organisation of waste collection; the establishment of disposal centres; the promotion of research and development on disposal methods and low-waste technology; and encouraging markets for recycled products (para. 7).

⁷ UNEP/GC.14/17 (1987), Annex II, UNEP GC/Dec./14/30, UNEP ELPG No. 8. These guidelines were designed to assist governments to develop policies for environmentally sound management of hazardous wastes from generation to final disposal. They include general principles to protect human health and the environment from damage from hazardous waste, including its transfrontier movement, and the requirement that 'all practicable steps' should be taken to ensure that management of hazardous waste is conducted in accordance with applicable international law in matters of environmental protection (Principle 2). Further principles address non-discrimination, international cooperation, transfer of technology, and a recognition that the protection of the environment 'is not achieved by the mere transformation of one form of pollution into another, nor by the mere transfer of the effects of pollution from one location to another, but only by the use of the waste treatment option . . . which minimises the environmental impact' (Principles 3–6). Subsequent principles address: generation and management (Principles 7 and 8); disposal (Principles 9–18); monitoring, remedial action and record-keeping (Principles 19 and 20); safety and contingency planning (Principles 21–23); transport (Principles 24–28); and liability and compensation (Principle 29).

states. Following a Commission review of the Strategy, in 1997, the Council adopted a revised Community Strategy for Waste Management, and in recent years new measures have been adopted to supplement the original Directive 91/689/EEC on hazardous waste.⁸

This chapter describes the international rules relating to particular aspects of the management of hazardous substances over their life cycle and to the management of wastes. In the absence of a comprehensive global framework governing the area, the chapter examines different elements of the risk management of hazardous substances and wastes. In the case of hazardous substances this includes rules relating to: (a) accident prevention, preparedness and response; (b) the classification, labelling, international trade and transportation of hazardous chemicals and pesticides; and (c) control of exposure to hazardous substances in the working environment. For wastes, the focus is on (a) prevention and treatment; (b) disposal; (c) recycling and reuse; and (d) international movement (including trade). The chapter also identifies and outlines the main international regulations that address activities considered to be particularly damaging to the environment. Nuclear activities, such as the generation of nuclear energy or the proliferation or testing of nuclear weapons, are an important example in this regard that have been the subject of extensive regulation. However, the chapter also discusses other potentially environmentally hazardous activities, such as energy, mining, transport, agriculture and tourism for which dedicated international rules are only just beginning to emerge.

The discussion in this chapter does not touch on all aspects of international regulation relevant to the management of hazardous substances and activities, and wastes. To develop a comprehensive understanding of the extent to which international law regulates hazardous substances, activities and wastes, it is necessary also to consider; the disposal of hazardous wastes in freshwater or at sea (Chapters 9 and 11); the environmental impact assessment of hazardous activities (including lists and annexes indicating categories of activities which require prior environmental assessment) (Chapter 14); information on hazardous activities and substances (including activities in respect of which information must be made available to the public or for which environmental auditing or accounting is recommended) (Chapter 15); the regional rules of the Antarctic (Chapter 13); the rules on international liability for environmental damage caused by hazardous activities and substances, and wastes (Chapter 16); and emerging case law, particularly at the European Court of Human Rights, linking hazardous substances pollution and wastes with the protection of fundamental human rights (Chapter 17). In addition, the first hazardous substances the production of which was prohibited by international law – certain ozone-depleting substances – are subject to the specific global regime described in Chapter 7 in relation to the protection of the atmosphere.

HAZARDOUS SUBSTANCES

Definition of Hazardous Substances

International rules regarding hazardous substances and activities to date have not been developed or applied in the framework of a coordinated regulatory strategy. One consequence is the lack of a general definition under international law as to what constitutes a hazardous or

⁸ For further detail on the development of relevant EU rules, see the second edition of this text, ch. 15, pp. 786–93.

dangerous activity or substance. The International Law Commission (ILC) in its draft Articles on Prevention of Transboundary Harm from Hazardous Activities did not define the term 'hazardous',⁹ although by implication from the scope of the draft Articles this covers activities 'which involve a risk of causing significant transboundary harm through their physical consequences'.¹⁰ In addition, many industrial and other activities that may, over time, pose significant long-term environmental threats are not subject to significant specific international environmental regulation. Examples include transport, mining, agriculture and energy generation.

At least four approaches to the definition of hazardous or dangerous substances and activities are discernible in international agreements. The most common approach defines hazardous substances and activities by reference to their inherent characteristics, including their toxicity, flammability, explosiveness and oxidisation.¹¹ A second approach characterises activities as hazardous by reference to a listing system which identifies certain activities or projects on the basis that they are, per se, likely to have significant effects on the environment.¹² A third approach defines hazardous substances by reference to national laws. Finally, a fourth approach (which is increasingly utilised) is reflected in those efforts that do not seek to establish definitions of general application but instead regulate specific substances.¹³ This approach underpins the most recent international efforts to regulate hazardous substances, such as the 1998 Chemicals Convention, the 2001 Persistent Organic Pollutants (POPs) Convention and the 2013 Minamata Mercury Convention.

Accident Prevention, Preparedness and Response

Many of the chemicals used widely in manufacturing and industrial processes present potential hazards to human health and the environment. One of the major ways in which these substances may affect people and the environment is if industrial accidents occur resulting in the environmental release of large quantities of chemical pollutants. Well-publicised incidents, such as those in Seveso, Italy, Bhopal, India, Basel, Switzerland and Romania have highlighted the potential for serious accidents to release toxic chemicals, causing widespread harm including transboundary impacts.¹⁴

⁹ The commentary to the draft Articles does elaborate the concept of an 'ultrahazardous activity' as 'an activity with a danger that is rarely expected to materialize but might assume, on that rare occasion, grave (more than significant, serious or substantial) proportions' (ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 2001, in *Yearbook of the International Law Commission* (2001-II), Part 2, commentary to Art. 1, para. 2).

¹⁰ Art. 1.

¹¹ EU Seveso Directive, pp. 575-6; 1992 Industrial Accidents Convention, pp. 576-7; and the various instruments relating to transport, pp. 579-80; 1993 ILO Accidents Convention, Art. 3(a).

¹² 1985 EU EIA Directive (as amended), Chapter 14, p. 662; 1991 Espoo Convention, Chapter 14, pp. 667-70; World Bank Operational Directive 4.01, Chapter 14, pp. 675-6.

¹³ 1985 Vienna Convention and 1987 Montreal Protocol, Chapter 7, pp. 279ff.; 1986 Asbestos Convention, p. 591; 1998 Chemicals Convention, pp. 587-9; 2000 Biosafety Protocol, Chapter 10, pp. 397-403; 2001 POPs Convention, pp. 581-3; 2013 Minamata Mercury Convention, pp. 83-585. See also the 2003 Protocol on Civil Liability and Compensation to the Industrial Accidents and Transboundary Watercourse Convention, Art. 2(2)(f) and Annex I.

¹⁴ In 1976, the release of a cloud of dioxin (tetrachlorodibenzoparadiioxin) from a pesticides/herbicides chemical plant in the Italian town of Seveso, resulted in a large-scale evacuation and the treatment of as many as 2,000 people for dioxin poisoning. In 1984, methyl isocyanate gas escaped from a US-owned pesticide plant in Bhopal, India, and killed 3,787 people. In 1986, a fire at a chemical warehouse in Basel killed thousands of fish and resulted in the pollution of the Rhine - in France and Germany, as well as in Switzerland. In January 2000, a mining company in Baia Mare in northern Romania accidentally spilled over 100,000 cubic meters of cyanide-polluted water into the Lapus River with the polluted water reached the Tisza, one of Hungary's largest rivers, causing massive fish die-off and endangering fresh water supplies.

Such incidents have provided the impetus for the conclusion of several international agreements that promote international cooperation on accident prevention, preparedness and response in relation to hazardous activities or substances. Some agreements in this category relate to the provision of information in certain emergency situations,¹⁵ or have been adopted to address particular hazards, such as radioactive substances,¹⁶ or oil pollution at sea.¹⁷ A large number of bilateral treaties also address transboundary accident preparedness and prevention, such as the agreement between the United States and Mexico on the discharge of hazardous substances along their international boundary. This establishes a joint contingency plan to deal with polluting incidents, consultation, and joint responses to polluting incidents, and establishes a 'Joint Response Team' to, inter alia, advise on measures needed to respond to the incident and to take measures to coordinate resources.¹⁸

International institutions have also been active in the area of industrial accident prevention. For instance, the International Labour Organization (ILO) adopted a Code of Conduct on Major Industrial Accidents,¹⁹ and a Convention on the Prevention of Major Industrial Accidents, which draws on regional arrangements, and establishes responsibilities for the employer and public authorities, in relation to the conduct of activities and the preparation of emergency preparedness arrangements.²⁰ The OECD has prepared Guiding Principles for Chemical Accident Prevention, Preparedness and Response, with an updated second edition released in 2003.²¹ The Principles address issues of planning, construction, management, operation and review of safety performance of industrial installations that employ hazardous processes. UNEP runs a programme on Awareness and Preparedness for Emergencies at the Local Level (APELL),²² and in 1991 established, on an experimental basis, a UN Centre for Urgent Environmental Assistance to address the assessment of and responses to human-made environmental emergencies, including industrial accidents.²³ The short-lived Centre was replaced by the Joint Environment Unit, which combines UNEP's technical environmental expertise with the humanitarian response structure of the UN Office for the Coordination of Humanitarian Affairs. Its main focus has been on sudden events requiring immediate and urgent action, including industrial, transport, oil spill and other technological emergencies.²⁴

¹⁵ OECD Council Decision on Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage (Preamble, Appendices I-III), 8 July 1988, 28 ILM 247 (1989); OECD Council Decision/Recommendation on Provision of Information to Public and Public Participation in Decision Making Processes Related to the Prevention of, and Responses to, Accidents Involving Hazardous Substances, 8 July 1988, OECD C(88)85, 28 ILM 277 (1989).

¹⁶ See pp. 593ff. ¹⁷ Chapter 11, pp. 486ff.

¹⁸ Agreement of Co-operation Between the United States of America and the United Mexican States Regarding Pollution of the Environment Along the Inland International Boundary by Discharges of Hazardous Substances (Annex II to the US-Mexico Environment Co-operation Agreement), 18 July 1985, in force 29 November 1985, 26 ILM 19 (1987), Arts. II, III, V and VI and Appendices I and II.

¹⁹ Prevention of Major Industrial Accidents: An ILO Code of Practice (1991).

²⁰ Convention No. 174 on the Prevention of Major Industrial Accidents, Geneva, 22 June 1993, in force 3 January 1996.

²¹ OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response (2003, 2nd edn), www.oecd.org/dataoecd/10/37/2789820.pdf. The Guiding Principles have been further supplemented by two addenda: the first, published in June 2011, takes into account the results of five workshops held under the auspices of the OECD Working Group on Chemical Accidents during the period from 2003-2007; the second, published in January 2015, addresses Natural Hazards Triggering Technological Accidents (Natech) Risk Management.

²² See UNEP Governing Council Decision 21/17, Further Improvement of Environmental Emergency Prevention, Preparedness, Assessment, Response and Mitigation (2001); www.unep.org/apell

²³ UNEP Governing Council Decision 16/9 (1991); UNGA Res. 44/224 (1989).

²⁴ See www.unocha.org/what-we-do/coordination-tools/environmental-emergencies

The two most important instruments adopted to date are regional agreements, which aim to establish rules applicable to a wide range of hazardous and dangerous activities. The first of these is the EU Seveso Directive, adopted in the aftermath of the Seveso accident, which is now in its third version (Seveso III). While only applicable to EU member states, the Directive has broader significance, given its influence on the adoption of other international regulations in the area. For instance, the second major treaty, the 1992 UNECE Convention on Industrial Accidents, draws heavily on the Seveso Directive.

EU Seveso Directive

EU rules are now to be found in a 2012 Directive (replacing earlier directives of 1996 and 2003), which replaced the original 1982 Directive adopted following a major industrial accident at Seveso, Italy.²⁵ The 2012 Directive has a more extensive application than the original 1982 law, by reason of the lower thresholds it applies, and provides more detailed obligations in relation to the prevention of accidents and the provision of information after they have occurred. As a consequence, the Directive now applies to risks arising from storage and processing activities in mining, from pyrotechnic and explosive substances, and from the storage of ammonium nitrate and ammonium-nitrate-based fertilisers.

The Seveso III Directive is aimed at preventing major accidents that involve dangerous substances, and the limitation of their consequences for human health and the environment.²⁶ It is applicable to establishments where dangerous substances are present in quantities exceeding limits as listed in its Annex I.²⁷ A major accident is defined as:

an occurrence such as a major emission, fire, or explosion resulting from uncontrolled developments in the course of the operation of any establishment covered by this Directive, and leading to serious danger to human health or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances.²⁸

Dangerous substances are substances or mixtures covered by Annex 1, Part 1 (substances categorised as hazardous under EU Regulation 1272/2008) or listed in Annex 1, Part 2 (named substances), including substances in the form of a raw material, product, by-product, residue or intermediate.²⁹ The Directive does not apply to certain installations, including nuclear and military installations, transport (including in pipelines), extractive industries and waste landfill sites.³⁰

Member states must ensure that operators take all measures necessary to prevent major accidents and to limit their consequences for human health and the environment, to notify certain activities, prepare a document setting out the major accident prevention policy (and ensure that it is properly implemented) and prepare a safety policy.³¹ The Directive also requires national authorities to identify (on the basis of notifications received) 'all lower-tier and upper-tier establishments or groups of establishments where the risk or consequences of a major

²⁵ Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso-III), OJ L197, 24 July 2012, 1–37 (which repealed the Seveso II Directive 96/82/EC by 1 June 2015 that itself repealed and replaced Council Directive 82/501/EEC, OJ L230, 5 August 1982).

²⁶ Art. 1. ²⁷ Arts. 2 and 3(1). ²⁸ Art. 3(13). ²⁹ Art. 3(10). ³⁰ Art. 2(2).

³¹ Arts. 5–8 and 10, and Annex II (minimum data and information to be considered in the safety report) and Annex III (setting out the principles to be followed in establishing the safety policy).

accident may be increased because of the geographical position and the proximity of such establishments, and their inventories of dangerous substances' (referred to as the 'domino effect').³² Member states are required to ensure that operators responsible for the establishments to which Article 12 applies draw up emergency plans (in accordance with Annex IV), that the objectives of preventing major accidents and limiting consequences are taken into account in land-use and other relevant policies, and that any establishment, installation or storage facility where the measures taken by the operator for the prevention and mitigation of major accidents are seriously deficient is not used.³³ In line with the procedural environmental rights of the Aarhus Convention, the Seveso III Directive makes extensive provision for public access to information (subject to confidentiality requirements), consultation and participation in decision-making relating to covered establishments and access to justice.³⁴ Additional requirements are specified for inspections, for the information that is to be provided in the event of an accident (including to the European Commission) and for information systems and the exchange of information.³⁵

1992 Industrial Accidents Convention

The 1992 Convention on the Transboundary Effects of Industrial Accidents (1992 Industrial Accidents Convention) was adopted under the auspices of the UNECE and follows the approach of the original 1982 Seveso Directive. Its objectives include the prevention of, preparedness for, and response to industrial accidents capable of causing transboundary effects, including those caused by natural disasters.³⁶ The Convention does not prejudice 'any obligations of the parties under international law with regard to industrial accidents and hazardous activities'.³⁷ The Convention applies to industrial accidents from activities involving hazardous substances, including categories of substances and preparations and named substances which are set out in Annex I.³⁸ It does not apply to nuclear accidents or accidents at military installations, dam failures, certain land-based transport accidents, accidental releases of genetically modified organisms, activities in the marine environment, and spills of oil and other harmful substances at sea.³⁹

Parties must identify hazardous activities within their jurisdiction and ensure that affected parties are notified, holding any necessary discussions on the identification of hazardous activities that are reasonably capable of causing transboundary effects.⁴⁰ Annex III establishes procedures for consultations between parties of origin and potentially affected parties.⁴¹ The Convention promotes international cooperation and the implementation of policies and strategies towards measures of prevention, preparedness and response, including restoration, and requires parties to ensure that operators take 'all measures necessary' for the safe performance of

³² Art. 9. ³³ Arts. 12, 13 and 19. ³⁴ Arts. 14 and 15, and Arts. 22–23. ³⁵ Arts. 16–18 and 20–21.

³⁶ 17 March 1992, in force 19 April 2000, 31 ILM 1330 (1992), as amended on 19 March 2008, Art. 2(1); there are forty-one parties to the Convention.

³⁷ Art. 3(5).

³⁸ Art. 1(a) and (b) and Annex I. The Convention follows the same categories as the original Seveso Directive and adds additional categories of 'dangerous for the environment' and 'dangerous to the environment'.

³⁹ Art. 2(2).

⁴⁰ Art. 4(1) and (2). Disagreement on whether an activity is hazardous may be submitted by any affected party to an inquiry commission in accordance with Annex II for advice (*ibid.*).

⁴¹ Art. 4(3) and Annex III.

hazardous activities and for the prevention of industrial accidents.⁴² Annex IV details the preventive measures to be taken, including: the setting of safety objectives; the adoption of legislative provisions or guidelines concerning safety measures and standards; the identification of activities requiring licensing or authorisation; risk evaluation for hazardous activities; information provision to authorities; application of the ‘most appropriate technology’; appropriate education and training; the establishment of managerial structures and practices; and the monitoring and auditing of hazardous activities.⁴³ Operators are required to demonstrate the safe performance of the hazardous activity.⁴⁴

Parties must develop policies on the siting of activities to minimise risk to the population and environment of all affected parties,⁴⁵ and establish and maintain adequate emergency preparedness, including on-site and off-site contingency plans.⁴⁶ In areas capable of being affected by an industrial accident arising out of a hazardous activity, the public must be given adequate information and an opportunity to participate in the relevant procedures on the development of prevention and preparedness measures.⁴⁷ The Convention goes beyond the Espoo Convention, by also providing that:

Parties shall, in accordance with their legal systems and, if desired, on a reciprocal basis provide natural or legal persons who are being or are capable of being adversely affected by the transboundary effects of an industrial accident in the territory of a party, with access to, and treatment in, the relevant administrative and judicial proceedings, including the possibilities of starting a legal action and appealing a decision affecting their rights, equivalent to those available to persons within their own jurisdiction.⁴⁸

The Convention establishes an industrial accident notification system, and requires parties to ensure that adequate response measures are taken as soon as possible, using the most efficient methods to contain and minimise effects.⁴⁹ The Convention establishes a framework for mutual assistance, requires parties to support appropriate international efforts to elaborate rules on responsibility and liability, and supports research and development and the exchange of information and technology.⁵⁰ The Convention is administered by the competent authorities of each party, annual meetings of the Conference of the Parties, and a secretariat provided by the UNECE.⁵¹ The Convention is supplemented by a Protocol (not yet in force) establishing a civil liability regime that relates to damage caused by the transboundary effects of industrial accidents on transboundary waters.⁵²

⁴² Art. 3(1)–(3). ⁴³ Art. 6(1) and Annex IV. ⁴⁴ Art. 6(2) and Annex V.

⁴⁵ Art. 7 and Annex V, para. 2(1)–(8), and Annex VI. ⁴⁶ Art. 8 and Annex V, para. 2(1)–(5), and Annex VII.

⁴⁷ Art. 9(1) and (2) and Annex V, para. 2(1)–(4) and (9), and Annex VIII.

⁴⁸ Art. 9(3); on the 1991 Espoo Convention, see Chapter 14, pp. 667–70.

⁴⁹ Art. 10 and Annex IX, and Art. 11. The first Conference of the Parties (November 2000) accepted a more detailed UNECE Industrial Accident Notification (IAN) System, based on three reports (early warning, information, request for assistance). In 2008, the IAN System was enhanced by the development of a web-based application, www.unece.org/env/teia/pointsofcontact.html

⁵⁰ Arts. 12–16 and Annexes X and XI. Information is to be subject to rules of confidentiality (Art. 22).

⁵¹ Arts. 17–20. Annex XII sets out tasks for mutual assistance to be subject to the Conference of the Parties’ programme of work.

⁵² Chapter 16, pp. 801–2.

Chemicals, Pesticides and Other Dangerous Substances

According to EU market data, there are more than 140,000 chemical substances in commerce, many of which appear as pollutants and contaminants in food, commercial products and the various environmental media, but for a great number of which there is insufficient scientific information for the assessment of risks.⁵³ The environmental risks posed by such chemicals may be of concern to international law where the chemicals can be widely dispersed throughout the environment and/or persist and accumulate in the environment over long time frames, thus posing threats of transboundary harm. Chemicals that are classified as 'persistent organic pollutants' (POPs) fall into this category and are subject to regulation under a specific treaty regime, the 2001 POPs Convention. Transboundary impacts may also arise where toxic chemicals are the subject of transportation and international trade. The potential for 'dumping' of hazardous substances and wastes in their territories has long been a concern of developing countries, especially in regions of Africa and South America where regulatory and technological capacity to deal with chemicals safely may be limited.⁵⁴

Many aspects of pesticide regulation fall within the general regulatory framework for chemicals, and are often categorised within the subgroup of hazardous chemicals but not necessarily named as pesticides. However, pesticides must be distinguished from hazardous chemicals because they are often highly toxic, produced and used in large quantities, and widely applied over large areas of land directly to the environment and over foodstuffs in such a way as to limit individual control over them. Studies have estimated that fertiliser use worldwide stood at over 180 million tonnes in 2013, with an expected growth to more than 200 million tonnes by the end of 2018.⁵⁵ Data on global pesticide consumption are more difficult to obtain but some studies estimate usage upwards of 5.6 billion pounds annually with as many as 25 million agricultural workers worldwide experiencing unintentional pesticide poisonings each year.⁵⁶

Ultimately, treaties and other international acts which have as their objective the international regulation of chemicals, pesticides and other hazardous substances aim at a policy of pollution prevention achieved through minimising, or phasing out, the use of these substances. In furtherance of this goal, international instruments have adopted a multi-pronged approach addressing four related issues: registration and classification (including labelling and packaging); production and use; international trade; and transport.

Registration and Classification (Including Labelling and Packaging)

International rules and practices for the registration and classification of hazardous substances are extensive as a result of the activities of the ILO, UNEP, WHO, FAO, OECD and the EU. Space limitations foreclose the possibility of a detailed assessment of the numerous instruments that

⁵³ See UNEP, *Global Chemicals Outlook: Towards Sound Management of Chemicals*, Synthesis Report for Decision-makers (2012), 9.

⁵⁴ Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako Convention), 29 January 1991, in force 22 April 1998, 30 ILM 775 (1991). See further pp. 623–4.

⁵⁵ FAO, *World Fertilizer Trends and Outlook to 2018* (2015), 8.

⁵⁶ M. C. Alavanja, 'Pesticide Use and Exposure Extensive Worldwide', 24(4) *Reviews on Environmental Health* 303 (2009). See also the database on pesticide use maintained by the FAO: <http://faostat.fao.org/site/424/default.aspx#ancor>

have been developed, most of which are not legally binding but nevertheless provide evidence of widely accepted international standards and practices.

The main registration and classification schemes are those applied: by UNEP, ILO and WHO, under the International Programme on Chemical Safety (IPCS);⁵⁷ by UNEP under UNEP Chemicals (formerly the International Register of Potentially Toxic Chemicals (IRPTC));⁵⁸ by the WHO;⁵⁹ and by the UN Economic and Social Council (ECOSOC).⁶⁰ In addition, the 1990 Convention Concerning Safety in the Use of Chemicals at Work requires states to establish systems and criteria for the classification of chemicals according to the type of hazards they present, in accordance with national or international systems.⁶¹ With regard to production, the FAO has developed a range of guidelines on various aspects of pesticide production and use, including registration and control;⁶² labelling;⁶³ retail distribution;⁶⁴ national legislation;⁶⁵ and obsolete stocks.⁶⁶ The OECD Council has also adopted a wide range of binding and non-binding acts.⁶⁷

Other schemes that apply include that developed by the Codex Alimentarius Commission, which was established in 1962 to implement the joint FAO/WHO Food Standards Programme. The purposes of the Programme include: protecting the health of consumers; promoting coordination of food standards work undertaken by international governmental and non-governmental organisations; and preparing and finalising regional or global standards. The Commission now has more than 180 members, and among the various standards it has developed are those setting maximum limits for pesticide residues.⁶⁸ The Codex Alimentarius is supplemented by the

⁵⁷ Set up in 1980 in order to establish the scientific health and environmental risk assessment basis for the safe use of chemicals (normative functions) and to strengthen national capabilities for chemical safety (technical cooperation), www.who.int/ipcs/en

⁵⁸ UNEP Chemicals builds on the technical foundation of the IRPTC set up by UNEP Governing Council Decisions, Revised Objectives and Strategies of the International Register of Potentially Toxic Chemicals, UNEP/GC/DEC/15/28 (1989). The Register includes details of more than 500 substances, including information on their physical and chemical characteristics, methods of use, and effects on man and the environment.

⁵⁹ WHO, *Recommended Classification of Pesticides by Hazard and Guidelines to Classification* (2009).

⁶⁰ Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria (2015, 6th rev. edn.), ST/SG/AC.10/11/Rev.6.

⁶¹ Convention Concerning Safety in the Use of Chemicals at Work (ILO Convention No. 170), Geneva, 25 June 1990, Art. 6.

⁶² See generally www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/list-guide-new/en. See also FAO Guidelines for the Registration of Pesticides, 2010; FAO Revised Guidelines on Environmental Criteria for the Registration of Pesticides, 1989; FAO Guidelines for Quality Control of Pesticides, 2011.

⁶³ FAO Guidelines on Good Labelling Practice for Pesticides, 2015.

⁶⁴ FAO Guidelines for Retail Distribution of Pesticides with Particular Reference to Storage and Handling at the Point of Supply to Users in Developing Countries, 1988.

⁶⁵ FAO Guidelines on Pesticides Legislation, 2015.

⁶⁶ FAO Guidelines on the Prevention of Accumulation of Obsolete Stocks, 1995.

⁶⁷ These include: 1981 and 1989 OECD Council Recommendations on Mutual Acceptance of Data in the Assessment of Chemicals and Good Laboratory Practices (OECD C(81)30/C(97)186 and OECD C(89)87/C(95)8); 1973 OECD Decision/Recommendation on Protection of the Environment by Control of Polychlorinated Biphenyls (OECD C(73)1); 1982 OECD Council Decision on Minimum Pre-Marketing Set of Data in Assessment of Chemicals (OECD C(82)196); 1987 OECD Decision/Recommendation on Further Measures for the Protection of the Environment by Control of Polychlorinated Biphenyls (OECD C(87)2); 1987 Decision/Recommendation on the Systematic Investigation of Existing Chemicals (OECD C(87)90); 1991 Decision/Recommendation on the Co-operative Investigation and Risk Reduction of Existing Chemicals (OECD C(90)163); Recommendation Concerning Chemical Accident Prevention, Preparedness and Response (OECD C(2003)221); 1996 Recommendation on Implementing Pollutant Release and Transfer Registers (OECD C(96)41, amended by OECD C(2003)87). See generally www.oecd.org/chemicalsafety/oecdouncilactsrelatedtochemicals.htm

⁶⁸ Chapter 3, p. 78; see FAO/WHO, *Procedural Manual of the Codex Alimentarius Commission* (2015, 24th edn), detailing the Risk Analysis Principles applied by the Committee on Pesticide Residues.

Consolidated List of Products whose consumption and/or sale has been banned, withdrawn, severely restricted or, in the case of pharmaceuticals, not approved by governments.⁶⁹

The most recent and comprehensive effort to establish harmonised practices regarding the classification and labelling of hazardous substances is the 'Globally Harmonized System of Classification and Labelling of Chemicals' (GHS),⁷⁰ developed under the auspices of the Inter-organisation Programme for the Sound Management of Chemicals (IOMC), a coordinating body for the work of the ILO, OECD and relevant expert committees within the UN. The GHS recognises the extensive global trade in chemicals and hence the need for common systems of classification and labelling as the basis for national programmes governing their safe use, transport and disposal. It is comprehensive in scope, applying to all hazardous chemicals, although the mode of its operation (e.g. labelling, production of safety data sheets) may vary by product category or stage in the life cycle of a particular chemical.

The mandate for preparation of the GHS was originally set by Agenda 21, which called for the harmonisation of systems for the classification and labelling of chemicals by the year 2000, including material safety data sheets and easily understandable symbols.⁷¹ Ten years on, the WSSD Plan of Implementation encouraged countries to implement the GHS as soon as possible with a view to having the system fully operational by 2008. However, apart from the EU, which implemented the GHS via a 2008 Regulation,⁷² few other countries met this target with implementation by developing countries still slow.⁷³

Production and Use

Although international law has long prohibited the production and use of certain weapons,⁷⁴ it has only more recently moved to prohibit, on environmental grounds, the production and use of certain industrial substances and products. The leading example of this type of international regulation is the 1987 Montreal Protocol that seeks to phase out the commercial production and use of certain ozone-depleting substances.⁷⁵ More recently, the international community has taken action through the 2013 Minamata Mercury Convention (discussed further below) to regulate the use of mercury in a number of products and processes. Another category of chemicals that has attracted regulatory attention at a regional and global level is persistent organic pollutants (POPs). POPs are organic chemicals characterised by their capacity to persist in the environment, their tendency to accumulate in organisms up the food chain, and their ability to travel long distances in the atmosphere and in water posing risks to human health and the environment far from their site of production.⁷⁶ Well-known POPs include the pesticide DDT, polychlorinated biphenyls (PCBs), dioxins and furans. All are chemicals or chemical by-products

⁶⁹ (2009, 15th issue), ST/ESA/323.

⁷⁰ Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (2015, 6th rev. edn).

⁷¹ Agenda 21, paras. 19.27 and 19.29.

⁷² Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006, OJ L353, 31 December 2008, 1, in force 20 January 2009.

⁷³ For details of country implementation efforts for the GHS, see www.unecce.org/trans/danger/publi/ghs/implementation_e.html

⁷⁴ e.g. the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons, Paris, 13 January 1993, in force 29 April 1997, 32 ILM 800 (1993).

⁷⁵ Chapter 7, pp. 280ff.

⁷⁶ Noelle Eckley, 'Traveling Toxics: The Science, Policy, and Management of Persistent Organic Pollutants', 43(7) *Environment* 24 at 26-7 (2001).

of manufacturing processes that have been widely used in industrialised societies since the mid-twentieth century. For this reason, regulating the risks posed by POPs requires more than simply a ban on their use. In addition, there is a need to identify suitable substitutes for POPs in essential manufacturing processes, to remove stockpiles of the chemicals, to undertake cleanup of contamination, to monitor their health and environmental effects and to initiate the implementation of cleaner technologies.⁷⁷ All such risk management measures may entail significant socio-economic consequences, particularly for less well-resourced developing countries.

While many POPs, such as DDT, have been the subject of domestic regulation for a decade or more, POPs only became a matter of international concern during the 1990s. Agenda 21 was the first global instrument to call for risk reduction programmes focused on 'phasing out or banning of chemicals ... that are toxic, persistent and bio-accumulative and whose use cannot be adequately controlled'.⁷⁸ In 1995, UNEP initiated a global scientific assessment process for twelve well-known POPs (described as the 'dirty dozen'), including DDT, PCBs, dioxins and furans.⁷⁹ This assessment was coordinated by the Intergovernmental Forum on Chemical Safety (IFCS), a body operating under the auspices of the WHO, which consists of 'an alliance of all stakeholders concerned with the sound management of chemicals'.⁸⁰ The IFCS report identified the need for international action, including a global legally binding instrument, to reduce the risks to human health and the environment posed by the dirty dozen POPs.⁸¹

2001 POPs Convention

International negotiations for a global POPs Convention began in June 1998 and concluded in Stockholm in May 2001.⁸² An important precedent for the negotiations was the Protocol on Persistent Organic Pollutants adopted in 1998 by the parties to the 1979 LRTAP Convention, which aims to eliminate the production and use of certain POPs within the UNECE region.⁸³ The 2001 Stockholm Convention on Persistent Organic Pollutants (2001 POPs Convention) globalises that objective, aiming to protect human health and the environment from persistent organic pollutants, and to that end it imposes measures to reduce or eliminate releases from the production and use of certain POPs.⁸⁴

The Convention is precautionary in approach, and initially targeted twelve POPs (the 'dirty dozen'): Annex A lists those which are targeted for elimination, and Annex B lists those which are to be restricted.⁸⁵ Article 3(1) requires parties to eliminate the production and use of all the

⁷⁷ *Ibid.*

⁷⁸ Commission on Sustainable Development, *Agenda 21: The United Nations Programme of Action from Rio* (1992), 19, 44.

⁷⁹ UNEP Governing Council Decision 18/32, Persistent Organic Pollutants, Nairobi, 25 May 1995.

⁸⁰ See the IFCS website at www.who.int/ifcs/page2/en/index.html

⁸¹ IFCS Ad Hoc Working Group on Persistent Organic Pollutants Meeting, Final Report, 21–22 June 1996, Manila, Philippines, IFCS/WG.POPs/Report.1, 1 July 1996, 4.1.

⁸² Negotiations were initiated by Decision 19/13 C of 7 February 1997 of the Governing Council of UNEP.

⁸³ Chapter 7, p. 269. ⁸⁴ Stockholm, 22 May 2001, in force 17 May 2004, 40 ILM 532 (2001), <http://chm.pops.int>

⁸⁵ Annex A originally listed: aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene and polychlorinated biphenyls (PCBs). Annex B lists DDT and perfluorooctane sulfonic acid. At its meetings in May 2009, 2011, 2013 and 2015, the Conference of the Parties adopted amendments to the Annexes to the POPs Convention to list fourteen additional chemicals as POPs: chlordecone, lindane, alpha hexachlorocyclohexane, beta hexachlorocyclohexane, pentachlorobenzene, perfluorooctane sulfonate, hexabromobiphenyl, hexachlorobutadiene, pentachlorophenol, polychlorinated naphthalenes, hexabromocyclododecane, technical endosulfan and two polybrominated flame retardants.

chemicals listed in Annex A, in accordance with that Annex, and to restrict production and use of chemicals listed in Annex B. Annexes A and B identify 'specific exemptions' in relation to the production and/or use of some (but not all) of the chemicals, and Annex B additionally identifies certain 'acceptable purposes'.⁸⁶ Article 3(2) requires parties to permit imports of chemicals listed on Annex A or Annex B for the purposes of environmentally sound disposal (in accordance with Article 6(1)(d)) or for a use which is permitted for the importing party under Annex A or B.⁸⁷ It also requires parties to allow exports only for environmentally sound disposal, or to a party which is permitted to use that chemical under Annex A or B, or to a state which is not a party to the Convention but which has provided an annual certification to the exporting party.⁸⁸ Finally, Article 3(2) also provides that a party may only export an Annex A chemical for which production and use exemptions are no longer in effect for it for the purpose of environmentally sound disposal.⁸⁹ Parties must take measures to regulate the prevention of production and use of new industrial chemicals which exhibit the characteristics of persistent organic pollutants, taking into account the criteria set forth in Annex D.⁹⁰ These criteria are also to be taken into account when assessing other pesticides or industrial chemicals already in use but not listed in Annex A or B.⁹¹

With regard to unintentional production, Article 5 requires parties to take certain measures to reduce releases from anthropogenic sources of the chemicals listed in Annex C, including action plans to identify and address releases, the use of substitutes, and the use of 'best available techniques' and 'best environmental practices'. The Convention also commits parties to develop implementation plans and provides for information exchange, public awareness and information, research and monitoring, and the provision of technical assistance to developing countries and economies in transition.⁹² Developed countries undertake to provide new and additional financial resources to enable developing countries and countries with economies in transition to meet the 'agreed full incremental costs' of implementing measures, and to that end a financial mechanism is 'defined'.⁹³ As with earlier conventions relating to climate change and biodiversity, it is recognised that the extent to which developing countries will effectively implement their commitments will depend on the effective implementation by developed country parties of their commitments relating to financial resources, technical assistance and technology transfer.⁹⁴ The Convention also sets forth reporting requirements and commits the Conference of the Parties to establish a non-compliance mechanism as soon as practicable.⁹⁵ Negotiations regarding the latter are under way,⁹⁶ but little progress has been made in the face of objections

⁸⁶ A list of the specific exemptions for POPs listed in Annex A and acceptable purposes for POPs listed in Annex B is maintained by the Convention Secretariat at <http://chm.pops.int/Implementation/Exemptions/SpecificExemptions/tabid/790/Default.aspx#exemptions>

⁸⁷ Art. 3(2)(a).

⁸⁸ Art. 3(2)(b). The certificate must specify the intended use of the chemical and state that the importing state is committed to protecting human health and the environment and complying with Art. 6(1) and (where appropriate) Annex B, Part II, para. 2. Art. 6(1) defines measures to reduce or eliminate releases from stockpiles or wastes, and Art. 6(2) calls for cooperation with the 1989 Basel Convention.

⁸⁹ Art. 3(2)(c).

⁹⁰ Art. 3(3). The criteria relate to: chemical identity; persistence; bioaccumulation; potential for long-range environmental transport; and adverse effects.

⁹¹ Art. 3(4). ⁹² Arts. 7 and 9–12. ⁹³ Art. 13(2) and (6). The GEF is designated on an interim basis (Art. 14).

⁹⁴ Art. 13(4). ⁹⁵ Arts. 15 and 17.

⁹⁶ For the draft text prepared by the open-ended working group on non-compliance over the course of 2006/7, see SC3/20, Annex.

from major developing countries such as China and India. By contrast, the Conference of the Parties, at its first meeting in 2005, adopted arbitration and conciliation procedures to govern the settlement of disputes in accordance with the direction in Article 18. The procedures are set out in Annex G to the Convention, which entered into force on 31 October 2007.⁹⁷

The Conference of the Parties is entrusted with implementation of the Convention, assisted by a secretariat (UNEP).⁹⁸ Provision is also made for adoption and amendment of the Convention and, in particular, its Annexes.⁹⁹ This includes procedures for parties to propose additional chemicals for listing as POPs in Annexes A, B and/or C. Under Article 8, proposed listings must be reviewed by an expert POPs Review Committee, which may prepare a risk profile in accordance with the criteria set forth in Annex E and, as appropriate, a risk management evaluation (on the basis of information provided by parties and observers relating to the considerations specified in Annex F). The Committee's evaluation of a chemical proposed for listing is to determine 'whether the chemical is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and/or environmental effects, such that global action is warranted'.¹⁰⁰ In deciding whether to list the chemical in Annex A, B and/or C, the Conference of Parties must take due account of the recommendations of the POPs Review Committee, including any scientific uncertainty, and act in a precautionary manner. This process of science-policy interaction appears to be working successfully to identify and regulate new POPs of international concern, with fourteen additional chemicals listed as POPs subject to the global regulatory regime during the past decade.¹⁰¹ However, this process may face greater pressure as the Convention moves to regulate POPs whose toxicity is not uniformly accepted, and for which the socio-economic consequences of bans would be more acute for many countries.¹⁰²

2013 Minamata Mercury Convention

International efforts to regulate production and use of mercury began in 2001 with a UNEP-led global assessment of mercury and its compounds, including information on the chemistry and health effects, sources, long-range transport, and prevention and control technologies relating to mercury. Based on this assessment, UNEP's Governing Council in 2003 concluded there was sufficient evidence of significant global adverse impacts from mercury and its compounds to warrant further international action to reduce the risks to human health and the environment from the release of mercury and its compounds into the environment. An intergovernmental negotiating committee commenced work in 2010, with negotiations concluded in 2013.¹⁰³ The Convention is not yet in force.¹⁰⁴

⁹⁷ See further Chapter 5, p. 173. ⁹⁸ Arts. 16 and 19–20. ⁹⁹ Arts. 21 and 22. ¹⁰⁰ Annex E.

¹⁰¹ Report of the Conference of the Parties of the Stockholm Convention on Persistent Organic Pollutants on the Work of Its Fourth Meeting, 8 May 2009, UNEP/POPS/COP.4/38.

¹⁰² Presently, the following chemicals are under review by the POPs Committee: Decabromodiphenyl ether (commercial mixture, c-decaBDE); Dicofof; Short-chained chlorinated paraffins; Pentadecafluorooctanoic acid (CAS No: 335-67-1, PFOA, perfluorooctanoic acid), its salts and PFOA-related compounds.

¹⁰³ UNEP, *Minamata Mercury Convention: Text and Annexes*, information booklet (UN, 2013). The Convention is named for Minamata, Japan, which in 1956 experienced severe, decades-long mercury poisoning of its population as a result of the release of methylmercury in the industrial wastewater from the Chisso Corporation's chemical factory. The chemical bioaccumulated in fish and shellfish eaten by locals causing acute neurological symptoms and widespread deaths.

¹⁰⁴ *Ibid.*, Art. 31 requires fifty ratifications in order for the treaty to enter into force.

The overarching objective of the Convention is to protect human health and the environment from anthropogenic emissions and releases of mercury and its compounds.¹⁰⁵ A key provision of the Convention relates to the phase-out and eventual elimination of certain ‘mercury-added products’ such as batteries, switches, lights, cosmetics, pesticides and measuring devices. For these products – listed in Part I, Annex A of the Convention – parties must not allow their manufacture, import or export after specified phase-out dates except where a party has a registered exemption under Article 6.¹⁰⁶ Article 4(2) permits some flexibility in this regard allowing as ‘an alternative’ for parties to indicate at the time of ratification or upon entry into force of an amendment to Annex A for it, that they will implement different measures or strategies to address products listed in Part I of Annex A. A party may only choose this alternative if it can demonstrate that it has already reduced to a *de minimis* level the manufacture, import, and export of the large majority of the products listed in Part I of Annex A and that it has implemented measures or strategies to reduce the use of mercury in additional products not listed in the Annex.¹⁰⁷ In relation to mercury-added products listed in Annex A, Part II (dental amalgam), parties commit to taking measures to encourage the phasing down of mercury in these products.¹⁰⁸ Certain mercury-containing products are excluded from Annex A, including those essential for civil protection and military uses; products for research, calibration of instrumentation, or for use as reference standard; products where no feasible mercury-free alternative for replacement is available, switches and relays, cold cathode fluorescent lamps and external electrode fluorescent lamps for electronic displays, and measuring devices; products used in traditional or religious practices; and vaccines containing thiomersal as preservatives.¹⁰⁹

The Convention also places restrictions on the use of mercury and mercury containing compounds in certain manufacturing processes listed in Annex B,¹¹⁰ such as chlor-alkali production, vinyl chloride monomer production, and acetaldehyde production. Parties are required to ban mercury use in manufacturing processes listed in Annex B, Part I by the specified phase-out dates except where a party has a registered exemption under Article 6.¹¹¹ For processes listed in Annex B, Part II, parties are directed to take a range of measures aimed at reducing mercury use, emissions and environmental releases of mercury.¹¹²

Any party may propose the listing of additional products or processes in Annex A or B,¹¹³ and the Conference of the Parties is required to review Annexes A and B within five years of the Convention’s entry into force.¹¹⁴

The Convention contains specific provisions regarding: the identification of stocks and sources of mercury and mercury supply;¹¹⁵ banning trade in mercury except under certain conditions;¹¹⁶ measures for controlling releases of mercury and mercury compounds from non-point sources;¹¹⁷ environmentally sound interim storage of mercury other than mercury waste;¹¹⁸ strategies to deal with mercury-contaminated sites;¹¹⁹ and encouragement to parties to consider the health aspects of mercury exposure.¹²⁰

¹⁰⁵ Art. 1. ¹⁰⁶ Art. 4(1). ¹⁰⁷ Art. 4(2). ¹⁰⁸ Art. 4(3) and Annex A, Part II. ¹⁰⁹ Annex A.

¹¹⁰ Art. 5(1) specifies that manufacturing processes in which mercury or mercury compounds are used do not include processes using mercury-added products, processes for manufacturing mercury-added products or processes that process mercury-containing waste.

¹¹¹ Art. 5(2) and Annex B, Part I. ¹¹² Art. 5(3) and Annex B, Part II. ¹¹³ Art. 4(7) and Art. 5(9).

¹¹⁴ Art. 4(8) and (9); Art. 5(10) and (11). ¹¹⁵ Art. 3(5). ¹¹⁶ Art. 3(6)–(11). ¹¹⁷ Art. 9. ¹¹⁸ Art. 10.

¹¹⁹ Art. 12. ¹²⁰ Art. 16.

The Convention establishes a financial mechanism for ‘the provision of adequate, predictable, and timely financial resources’ to assist implementation of the Convention provisions by developing countries and countries with economies in transition.¹²¹ Article 13(2) acknowledges that the ‘overall effectiveness’ of developing country implementation will be related to the effective implementation of financial resourcing requirements. The financial mechanism is supplemented by provisions concerning cooperation on technology transfer and capacity-building for developing country parties (especially LDCs and small island developing states), and parties with economies in transition.¹²² A facilitative implementation review and non-compliance mechanism is established by Article 15,¹²³ and overall implementation of the Convention is entrusted to the Conference of the Parties, assisted by a Secretariat.¹²⁴

International Trade

International trade in chemicals, pesticides and banned or severely restricted products and substances has been a legally and politically complex subject. It has also been a source of tension between developed and developing countries as substances banned from consumption or sale in developed countries have found their way onto the markets of some developing countries, which may lack the technical capacity, resources or regulatory infrastructure to manage their domestic use safely. An important function of international regulation of trade in hazardous substances has therefore been to address the capacity-building needs of developing country importers through technical cooperation and financial assistance. Initial efforts to regulate trade in hazardous substances utilised non-binding guidelines of international organisations. These were followed by regional commitments established by the OECD and the 1991 Bamako Convention. In 1998, under the auspices of the FAO and UNEP, a convention of potentially global application was adopted.

In the past, the UN has frequently considered the issue of the regulation of products harmful to health and the environment, usually by placing the emphasis on the need to regulate their international traffic. In 1983, the General Assembly adopted a resolution that provided the basis for the principle of ‘prior informed consent’, which underlies the 1998 Chemicals Convention. This resolution declared that:

products that have been banned from domestic consumption and/or sale because they have been judged to endanger health and the environment should be sold abroad by companies, corporations or individuals only when a request for such products is received from an importing country or when the consumption of such products is officially permitted in the importing country.¹²⁵

The 1983 UN General Assembly resolution also resolved that:

all countries that have severely restricted or have not approved domestic consumption and/or sale of specific products, in particular pharmaceuticals and pesticides, should make available full information on these products with a view to safeguarding the health and environment of the importing country, including clear labelling in a language acceptable to the importing country.¹²⁶

¹²¹ Art. 13(5). ¹²² Art. 14. ¹²³ Provision is also made for the settlement of disputes under Art. 25.

¹²⁴ Arts. 23–24. ¹²⁵ UNGA Res. 37/137 (1983), para. 1. ¹²⁶ *Ibid.*, para. 2.

The principle of 'prior informed consent' has subsequently been defined as 'the principle that international shipment of a chemical that is banned or severely restricted in order to protect human health or the environment should not proceed without the agreement, where such agreement exists, or contrary to the decision, of the designated national authority in the importing country'.¹²⁷ The prior informed consent procedure, which requires the formal obtaining and disseminating of the decisions of importing countries on whether they wish to receive further shipments of chemicals which have been banned or severely restricted, has been used in UNEP and FAO non-binding instruments, and integrated into the legally binding arrangements for international trade in hazardous waste established by, for example, the 1989 Basel Convention¹²⁸ and the 1991 Bamako Convention.¹²⁹

In 1990, the General Assembly endorsed the utilisation and implementation of the 'prior informed consent schemes for chemicals and pesticides in international trade', and requested the UN Regional Economic Commissions to contribute to the prevention of illegal traffic in toxic and dangerous products and wastes by monitoring and ensuring regional assessment of illegal traffic and its environmental and health consequences.¹³⁰ The resolution also called on the Secretary General to disseminate the UN Consolidated List, ensure the more effective involvement of non-governmental organisations in its utilisation, and study sustainable alternatives to banned and severely restricted products and unregistered pesticides. This was followed by the 1985 FAO Code of Conduct and the 1987 UNEP London Guidelines,¹³¹ which now adopt the approach taken in the 1998 Chemicals Convention that came into force on 24 February 2004.¹³²

1985 FAO Code of Conduct

The most widely used 'soft' instrument, which applies only to pesticides,¹³³ is the voluntary International Code of Conduct on Pesticides Management, originally adopted by the FAO Conference in 1985.¹³⁴ Following the adoption of the 1998 Chemicals Convention, work was initiated by the FAO to revise and update the Code, resulting in the approval of a revised version in November 2002.¹³⁵ This revised version has itself been replaced by the new text of the International Code of Conduct on Pesticide Management approved by the FAO Conference on

¹²⁷ Adopted by UNEP Governing Council Decision 14/27 of 27 June 1987, amended by UNEP Governing Council Decision 15/30 of 25 May 1989, para. 1(g).

¹²⁸ See pp. 620–3. ¹²⁹ See pp. 623–4.

¹³⁰ UNGA Res. 44/226 (1990); see also the Report of the UN Secretary General on 'Products Harmful to Health and the Environment', A/44/276 (1989).

¹³¹ Adopted by UNEP Governing Council Decision 14/27 of 27 June 1987, amended by UNEP Governing Council Decision 15/30 of 25 May 1989.

¹³² On 11 September 1998, the Chemicals Convention was adopted at a conference of plenipotentiaries jointly convened by FAO and UNEP. The conference also adopted a Resolution on Interim Arrangements, which changed the voluntary PIC procedures operated by UNEP, together with those formerly under the FAO Code (discussed below), to bring them into line with the procedure established by the Chemicals Convention in order to operate as an 'interim PIC procedure'. Since the coming into force of the Chemicals Convention in 2004, this interim PIC procedure has been phased out, formally ceasing to operate on 24 February 2006 (Decision RC-1/13).

¹³³ The 2013 version of the Code broadens its scope beyond agricultural pesticides to incorporate public health pesticides and substances used in vector control.

¹³⁴ 23 FAO Conference Res. 10/85 (1985). The Code was amended in 1989 to include the principle of prior informed consent in Art. 9 (FAO Conference Res. 6/89 (1989)).

¹³⁵ In November 2002, the 123rd Session of the FAO Council (with the authorisation of the 31st Session of the FAO Conference) approved the revised version of the International Code of Conduct on the Distribution and Use of Pesticides by Council Res. 1/123.

18 June 2013.¹³⁶ The 2013 Code no longer includes procedures for prior informed consent in respect of pesticides trade as these have been superseded by provisions in the 1998 Chemicals Convention. The Code has also been updated to reflect modern approaches to pesticides management that incorporate the 'life-cycle concept' (covering every aspect of pesticide management from production to proposal) and processes of integrated pest management.¹³⁷ The revised Code is particularly directed to strengthening pesticides management in developing countries where significant problems persist with regard to the enforcement of pesticide legislation, the sale of highly hazardous or substandard formulations, and inadequate training and protection of end users to minimise the risks in handling pesticides.

The Code defines and clarifies the responsibilities of all public and private entities involved in pesticide management, including aspects of international distribution and trade.¹³⁸ The Code establishes basic rules on pesticide management, testing, reducing health and environmental risks, and adoption of regulatory and technical requirements, including registration and recording of import data and use.¹³⁹ It recommends that the availability and use of pesticides should be subject to national rules and regulations, and restricted as necessary.¹⁴⁰ It recommends that industry should take all measures to ensure that pesticides entering international trade conform at a minimum to relevant FAO and WHO standards, and that pesticides manufactured for export meet the same quality requirements imposed on comparable domestic products.¹⁴¹ The FAO Code also includes provisions on labelling, packaging, storage, disposal and advertising.¹⁴²

Previously central to the FAO Code were the provisions on information exchange and prior informed consent, set out in Article 9. As amended, this Article now addresses information exchange only. The FAO Code recommends that governments should facilitate the exchange of information between regulatory authorities, including information on actions taken to ban or severely restrict a pesticide and scientific, technical, economic, regulatory and legal information concerning pesticides. In addition, governments are encouraged to develop legislation and regulations that allow public access to information about pesticide risks and facilitate public participation in the regulatory process.¹⁴³ The Code does not establish any new institutional arrangements to apply the provisions on information exchange: the FAO and other international organisations are called upon to give full support to the observance of the Code, and governments must monitor its observance.¹⁴⁴

1998 Chemicals Convention

The objective of the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998 Chemicals Convention) is:

¹³⁶ FAO/WHO, International Code of Conduct on Pesticide Management (Rome, 2014), available at www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/CODE_2014Sep_ENG.pdf

¹³⁷ Art. 1.

¹³⁸ Pesticides are defined as 'any substance, or mixture of substances of chemical or biological ingredients intended for repelling, destroying or controlling any pest, or regulating plant growth' (Art. 2). This definition extends to public health pesticides and substances used in vector control.

¹³⁹ Arts. 3–6. ¹⁴⁰ Art. 7. ¹⁴¹ Art. 8(2). ¹⁴² Arts. 10 and 11. ¹⁴³ Art. 9(2). ¹⁴⁴ Art. 12(5) and (6).

to promote shared responsibility and co-operative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.¹⁴⁵

The Convention draws upon the earlier FAO and UNEP voluntary schemes in applying a prior informed consent (PIC) procedure for chemicals listed in Annex III to the Convention, which is applicable to banned or severely restricted chemicals and severely hazardous pesticide formulations,¹⁴⁶ subject to certain exceptions.¹⁴⁷ Each party is to designate a national authority.¹⁴⁸ With regard to chemicals,¹⁴⁹ a party that has banned or severely restricted a chemical (taken a 'final regulatory action') is to notify the secretariat, which will then forward the information to all parties.¹⁵⁰ With regard to pesticides, any party that is a developing country or a country with an economy in transition and that is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory, may propose to the secretariat the listing in Annex III of the severely hazardous pesticide formulation.¹⁵¹ The secretariat will then forward the proposal to the Chemical Review Committee, which will review the information and recommend to the Conference of the Parties whether the formulation should be subject to the PIC procedure and, accordingly, listed in Annex III.¹⁵²

The Convention presently lists forty-seven chemicals, the majority of which are pesticides. The Conference of the Parties may add further chemicals to Annex III on the basis of recommendations by the Chemicals Review Committee in accordance with criteria laid down in Annex II.¹⁵³ Unlike its equivalent in the POPs Convention, the Chemicals Review Committee is not obliged to observe the precautionary principle in carrying out its decision-making tasks. The failure to include precautionary concepts in the Convention may prove problematic over time, inhibiting

¹⁴⁵ Rotterdam, 10 September 1998, entered into force 24 February 2004, 38 ILM 1 (1999), Art. 1. The Convention currently has 155 states parties.

¹⁴⁶ Art. 3(1). A 'banned chemical' is 'a chemical all uses of which within one or more categories have been prohibited by final regulatory action, in order to protect human health or the environment' (Art. 2(b)). A 'severely restricted chemical' is 'a chemical virtually all use of which within one or more categories has been prohibited by final regulatory action in order to protect human health or the environment, but for which certain specific uses remain allowed' (Art. 2(c)). A 'severely hazardous pesticide formulation' means 'a chemical formulated for pesticidal use that produces severe health or environmental effects observable within a short period of time after single or multiple exposure, under conditions of use' (Art. 2(d)).

¹⁴⁷ By Art. 3(2), the Convention does not apply to: narcotic drugs and psychotropic substances; radioactive materials; wastes; chemical weapons; pharmaceuticals, including human and veterinary drugs; chemicals used as food additives; food; and chemicals in quantities not likely to affect human health or the environment provided they are imported for certain purposes.

¹⁴⁸ Art. 4.

¹⁴⁹ A 'chemical' is 'a substance whether by itself or in a mixture or preparation and whether manufactured or obtained from nature, but does not include any living organism' (Art. 2(a)). It consists of two categories: pesticide (including severely hazardous pesticide formulations) and industrial.

¹⁵⁰ Art. 5(1) and (2). Notifications under the amended UNEP London Guidelines or the FAO Code of Conduct need not be submitted (Art. 5(2)). Annex I identifies information requirements for Art. 5 notifications.

¹⁵¹ Art. 6(1). ¹⁵² Art. 6(3)–(5).

¹⁵³ Arts. 7 and 8. Amendments to Annex III are to be adopted by consensus (Art. 22(5)(b)). Provision is also made for removal of chemicals from the list (Art. 9). The criteria for listing (and removing) chemicals and pesticides is set forth in Annexes II and IV.

the capacity of the Conference of the Parties to respond proactively to the emergence of new chemical risks about which there is some level of scientific uncertainty. In addition, the stringent scientific data requirements set out in Annex II 'will make it almost impossible for any regulatory actions taken by developing countries to qualify for consideration as a basis for including chemicals in the PIC list'.¹⁵⁴

Articles 10 and 11 of the Convention establish the PIC procedure in respect of imports and exports of chemicals listed in Annex III. The export of banned or severely restricted chemicals that are not so listed is governed by a separate notification procedure.¹⁵⁵ Without prejudice to the requirements of the importing party, exported chemicals which are listed in Annex III or which are banned or severely restricted must be labelled to ensure 'adequate availability of information with regard to risks and/or hazards to human health or the environment, taking into account relevant international standards'.¹⁵⁶ The Convention also makes provision for general information exchange and technical assistance (though not for financial assistance to developing countries), as well as implementation of the Convention.¹⁵⁷ The Conference of the Parties is responsible for reviewing and evaluating implementation of the Convention, assisted by a secretariat (FAO and UNEP), and is also tasked with establishing a non-compliance mechanism.¹⁵⁸ In respect of the latter, in 2005 a working group was set up to develop procedures and institutional mechanisms for determining non-compliance, but agreement has so far proved elusive.

Transport

International regulations for the transport of hazardous substances and goods establish standards and guidelines to govern the conditions under which such transport is to take place. These conditions relate to labelling, packaging, shipping and marking, and different standards and rules have been put in place to cover different modes of transport. Apart from the general Recommendations adopted by the UN,¹⁵⁹ rules have been adopted to govern the transportation of hazardous goods and substances by road,¹⁶⁰ by rail,¹⁶¹ by sea,¹⁶² by air¹⁶³ and by inland

¹⁵⁴ M. Pallemerts, *Toxics and Transnational Law: International and European Regulation of Toxic Substances as Legal Symbolism* (Portland, OR/Oxford: Hart, 2003), 576.

¹⁵⁵ Art. 12. The notification must include the information set out in Annex V.

¹⁵⁶ Art. 13(2). A party may also require that chemicals subject to environmental or health labelling requirements in its territory are, when exported, subject to labelling requirements that ensure adequate availability of information with regard to the risks and/or hazards to human health or the environment, taking into account relevant international standards (Art. 13(3)).

¹⁵⁷ Arts. 14–16. ¹⁵⁸ Arts. 17–19.

¹⁵⁹ UN Recommendations on the Transport of Dangerous Goods, Model Regulations Geneva, 26 April 1957 (2015, 19th edn), ST/SO/AC.10/1/Rev.19.

¹⁶⁰ See e.g. European Agreement Concerning the International Carriage of Goods by Road (1957 ADR), Geneva, 30 September 1957, 619 UNTS 77, as amended (1297 UNTS 406) and restructured with effect from 1 July 2001. Biannually, a body of international experts, known as WP.15 (Working Party on the Transport of Dangerous Goods), meets at the UN in Geneva to discuss and update the ADR; the current version is ECE/TRANS/242, Vol. I and II ('ADR 2015').

¹⁶¹ See e.g. Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID), 2015 edition, Annex I of the Convention Concerning International Carriage by Rail 1980, www.otif.org/index.php?id=541&L=2

¹⁶² IMO, International Maritime Dangerous Goods Code (IMDG Code), as amended (from 1 January 2016, the provisions of the IMDG Code, 2014 edition, entered into force on a mandatory basis).

¹⁶³ ICAO Technical Instruction for the Safe Transport of Dangerous Goods by Air, DOC.9284-AN/905 (2015–2016 edn) (ICAO TI); Convention Concerning the Safe Transport of Dangerous Goods by Air (Annex 18 to the 1944 ICAO Convention).

waterways.¹⁶⁴ Special rules have been promulgated by the IAEA to govern the transport of radioactive materials.¹⁶⁵

Exposure in the Work Environment

International regulation regarding hazardous substances extends beyond activities with an explicit transnational dimension (such as international trade or transport) to matters of domestic governance, such as the use of these substances in workplaces. The principal international organisation that has been involved in the development of international rules to protect the working environment has been the International Labour Organization (ILO), under whose auspices at least nine international agreements have been negotiated, adopted and implemented. These relate to: nuclear hazards; benzene; carcinogenic substances; hazards due to air pollution and noise; occupational health services; asbestos; construction safety; chemicals generally; and the prevention of industrial accidents.¹⁶⁶ Although these agreements are primarily intended to protect humans rather than the environment, their application contributes to the protection of the environment, and many contain innovative provisions that have been incorporated into other environmental agreements.

The ILO's first Convention addressed nuclear hazards,¹⁶⁷ and was followed in 1971 by the Convention Concerning Protection Against Hazards of Poisoning Arising from Benzene (1971 Benzene Convention), which has thirty-eight parties.¹⁶⁸ The 1971 Benzene Convention applies to all activities exposing workers to benzene and products containing benzene, and requires harmless or less harmful substances to be used instead of benzene or products containing benzene whenever they are available, and a prohibition on their use as a solvent or diluent in most situations.¹⁶⁹ The Convention fixes a maximum benzene concentration in the air, requires occupational hygiene and technical measures, regular medical examinations and labelling requirements; and requires pregnant women and children under eighteen not to be exposed to benzene and benzene products.¹⁷⁰

The 1974 Convention Concerning Prevention and Control of Occupational Hazards Caused by Carcinogenic Substances and Agents (Occupational Cancer Convention) commits its thirty-nine parties to determine the carcinogenic substances and agents in respect of which occupational exposure is to be prohibited or subjected to authorisation or other control and to protect workers against the risk of exposure to such substances and agents.¹⁷¹

The 1977 Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration (1977 Working Environment Convention), which has forty-five parties, applies to all economic activities and requires parties to adopt national laws or regulations to protect against hazards in the working environment from air pollution, noise and vibration.¹⁷² The Convention does not set individual

¹⁶⁴ See e.g. Agreement on International Carriage of Dangerous Goods by Inland Waterways (2013 ADN), 1 January 2013, www.unece.org/trans/danger/publi/adn/adn2013/13files_e.html

¹⁶⁵ IAEA, Regulations for the Safe Transport of Radioactive Material (2000), as amended. The latest edition of the Regulations was issued in 2012 and is available at www-pub.iaea.org/books/IAEABooks/8851/Regulations-for-the-Safe-Transport-of-Radioactive-Material

¹⁶⁶ See pp. 576–7. ¹⁶⁷ See p. 598. ¹⁶⁸ Geneva, 23 June 1971, in force 27 July 1973, 2 UNTS 45.

¹⁶⁹ Arts. 1, 2 and 4(2). ¹⁷⁰ Arts. 6(2), 9(1), 11 and 12.

¹⁷¹ Geneva, 26 June 1974, in force 10 June 1976, 1010 UNTS 5.

¹⁷² Geneva, 20 June 1977, in force 11 July 1979, 1 SMTE 482 (ILO Convention No. 148), Arts. 1(1) and 4(1).

standards of general application, but requires national authorities to specify exposure limits on the basis of criteria established and regularly revised in light of national and international knowledge and data, with a general objective of keeping the working environment 'as far as possible' free from these hazards.¹⁷³

The 1985 Convention Concerning Occupational Health Services, which has thirty-two parties, requires parties to formulate, implement and regularly review a coherent national policy, and to provide occupational health services for workers in all areas of economic activity.¹⁷⁴ Occupational health services must identify and assess health risk, ensure surveillance of factors affecting health, advise on the planning and organisation of work and on health, safety and hygiene, provide surveillance of workers' health, organise first aid and emergency treatment, and analyse accidents and occupational diseases.¹⁷⁵

The 1986 Convention Concerning Safety in the Use of Asbestos, which has thirty-five parties, applies to all activities exposing workers to asbestos, and requires parties to adopt laws or regulations to protect workers' health.¹⁷⁶ The Convention gets very close to a complete ban on asbestos and products containing asbestos, requiring where necessary and whenever possible the replacement of asbestos or products containing asbestos by other materials which have been scientifically evaluated as harmless or less harmful, and the total or partial prohibition of the use of asbestos and products containing asbestos in certain work processes.¹⁷⁷ The Convention prohibits the use of crocidolite and products containing the fibre, and the spraying of all forms of asbestos,¹⁷⁸ requires labelling of containers containing asbestos and products containing asbestos, and the prescription of exposure limits fixed in light of technological progress and technological and scientific knowledge.¹⁷⁹ Removal of asbestos may only be carried out by qualified employers or contractors, subject to the drawing up of a work plan, and disposal of waste containing asbestos must not pose a health risk to workers or the population in the vicinity.¹⁸⁰

The 1988 Convention Concerning Safety and Health in Construction applies to all construction activity, and establishes a general obligation to ensure that all work places are safe and without risk of injury to the safety and health of workers.¹⁸¹ Of particular relevance to broader environmental concerns are the provisions on health hazards requiring preventive measures to be taken to prevent exposure of workers to chemical, physical or biological hazards that are liable to be dangerous to health.¹⁸² To that end, hazardous substances must be replaced by harmless or less harmful substances wherever possible, or technical measures are to be applied to the plant, machinery, equipment or process, or other effective measures such as the use of personal protective equipment and clothing are to be used.¹⁸³ Adequate measures must also be provided where workers enter areas in which toxic or harmful substances may be present, and waste should not be destroyed on a construction site in a manner liable to injure health.¹⁸⁴

The 1990 Convention Concerning Safety in the Use of Chemicals at Work establishes rules for all economic activity on the classification of chemicals according to the inherent hazards they pose for health and physical safety, as well as rules designed to protect workers from these

¹⁷³ Arts. 8 and 9.

¹⁷⁴ Geneva, 26 June 1985, in force 17 February 1988, 2 SMTE 126 (ILO Convention No. 155), Arts. 2 and 3.

¹⁷⁵ Art. 5. ¹⁷⁶ Geneva, 24 June 1986, in force 16 June 1989, 2 SMTE 359 (ILO Convention No. 162), Art. 3(1).

¹⁷⁷ Art. 10. ¹⁷⁸ Arts. 11 and 12. ¹⁷⁹ Arts. 14 and 15. ¹⁸⁰ Arts. 17 and 19.

¹⁸¹ Geneva, 20 June 1988, in force 11 January 1991, 2 SMTE 440, Art. 13. ¹⁸² Art. 28(1). ¹⁸³ Art. 28(2).

¹⁸⁴ Art. 28(3) and (4).

hazards, including marking and labelling, and the maintenance of chemical safety data sheets by employers.¹⁸⁵ Under the Convention, all chemicals must be marked, and hazardous chemicals must be marked in a way easily understandable to workers to provide essential information regarding their classification, the hazards they present and the safety precautions to be taken.¹⁸⁶ Employers must be provided with chemical safety data sheets for hazardous chemicals, and suppliers have particular responsibilities for the classification, marking and labelling of chemicals and hazardous chemicals, as well as the preparation of the safety sheets.¹⁸⁷ The responsibilities of employers include the obligation to ensure that chemicals which are not classified, identified and assessed or labelled and marked in accordance with the Convention are not used, and to ensure that workers are not exposed to chemicals 'to an extent which exceeds exposure limits or other exposure criteria for the evaluation and control of the working environment' established by the national authority in accordance with national or international standards.¹⁸⁸ The employer must also assess, monitor and record the exposure of workers to hazardous chemicals, and assess the risks arising from the use of chemicals at work and protect workers against such risks by choosing chemicals or technologies that eliminate or minimise risk as mentioned previously.¹⁸⁹ Other obligations relate to the disposal of hazardous chemicals and containers that may contain residues in a manner that eliminates or minimises risk in accordance with national law and practice, and to provide information and training.¹⁹⁰ The Convention also requires exporting states, which have banned or restricted the use of certain hazardous chemicals, to communicate the fact and the reasons underlying it to the national authorities of any importing country.¹⁹¹

The ILO also participated, together with IMO and parties to the Basel Convention, in the elaboration of the 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (2009 Ship Recycling Convention).¹⁹² The Convention aims to address all the issues around ship recycling, including the fact that ships sold for scrapping may contain hazardous substances such as asbestos, heavy metals, hydrocarbons and ozone-depleting substances that present hazards to health, to the environment and to workers at ship recycling facilities. When the Convention enters into force,¹⁹³ ships to be recycled will be required to maintain an inventory of hazardous materials that is specific to each ship.¹⁹⁴ A party must prohibit and/or restrict the installation or use of hazardous materials listed in Appendix I to the Convention on ships entitled to fly its flag or operating under its authority, and on ships while in its ports, shipyards, ship repair yards, or offshore terminals, and shall take effective measures to ensure that such ships comply with those requirements.¹⁹⁵ A ship-specific recycling plan must be developed by the ship recycling facility prior to recycling taking place.¹⁹⁶ Authorised ship

¹⁸⁵ Geneva, 24 June 1990, in force 4 November 1993 (ILO Convention No. 170). The Convention defines 'chemicals' as 'chemical elements and compounds, and mixtures thereof, whether natural or synthetic' (Art. 2(a)).

¹⁸⁶ Art. 7(1) and (2). ¹⁸⁷ Arts. 8 and 9. ¹⁸⁸ Arts. 10 and 12(a). ¹⁸⁹ Arts. 12(b) and (c) and 13.

¹⁹⁰ Arts. 14 and 15. ¹⁹¹ Art. 19.

¹⁹² International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong), 11 May 2009, not in force, IMO Doc. SR/CONF/45. See also Chapter 11, p. 495.

¹⁹³ Art. 17. The Convention is open for accession by any state. It will enter into force twenty-four months after the date on which fifteen states, representing 40 per cent of world merchant shipping by gross tonnage, have either signed it without reservation as to ratification, acceptance or approval or deposited an instrument of ratification, acceptance, approval or accession with the Secretary General. Furthermore, the combined maximum annual ship recycling volume of those states must, during the preceding ten years, constitute not less than 3 per cent of their combined merchant shipping tonnage.

¹⁹⁴ Annex, Regulation 5. ¹⁹⁵ Annex, Regulation 4. ¹⁹⁶ Annex, Regulation 9.

recycling facilities must ensure safe and environmentally sound removal of any hazardous material contained in a ship approved for recycling. This includes ensuring that hazardous materials detailed in the ship's inventory are properly identified, labelled, packaged and removed to the maximum extent possible prior to scrapping, and that all wastes generated from the recycling activity are kept separate, labelled and appropriately stored so that they do not pose a risk to workers, human health or the environment, and only transferred to a waste management facility authorised to deal with their treatment and disposal in a safe and environmentally sound manner.¹⁹⁷

Parties are also to maintain certain controls on ship recycling facilities to ensure they are designed, constructed and operated in a safe and environmentally sound manner.¹⁹⁸ As a general matter, ship recycling facilities authorised by a party are to establish management systems, procedures and techniques which do not pose health risks to the workers concerned or to the population in the vicinity of the facility and which will prevent, reduce, minimise and to the extent practicable eliminate adverse effects on the environment caused by ship recycling, taking into account guidelines to be developed by IMO.¹⁹⁹ This is supplemented by a requirement for facilities to put in place a detailed Ship Facility Recycling Plan covering matters such as: a policy ensuring workers' safety and the protection of human health and the environment; a system for ensuring implementation of the Convention requirements, the policy goals of the recycling company and continuous improvement or procedures and standards; identification of roles and responsibilities for employers and workers when conducting ship recycling operations; a programme for providing appropriate information and training of workers for the safe and environmentally sound operation of the facility;²⁰⁰ an emergency preparedness and response plan;²⁰¹ a system for monitoring performance; a system for reporting discharges, emissions, incidents and accidents causing damage, or with the potential for causing damage, to workers' safety, human health and the environment;²⁰² and a system for reporting occupational diseases, accidents, injuries and other adverse effects on workers' safety and human health.²⁰³ In addition, ship recycling facilities authorised by a party must: establish and utilise certain procedures to prevent adverse effects to human health or the environment including those designed to prevent explosions, fires and other unsafe conditions; prevent harm from dangerous atmospheres and other unsafe conditions; prevent other accidents, occupational diseases and injuries or other adverse effects on health and the environment; and prevent spills or emissions throughout ship recycling that may cause health or environmental harm.²⁰⁴

HAZARDOUS ACTIVITIES

Nuclear Activities and Radioactive Substances²⁰⁵

The potential for widespread consequences and long-term effects on human health and the environment have seen nuclear activities, and associated contamination by radioactive

¹⁹⁷ Annex, Regulation 20. ¹⁹⁸ Annex, Regulation 15. ¹⁹⁹ Annex, Regulation 17.

²⁰⁰ Specific requirements relating to worker safety and training are set out in Regulation 22.

²⁰¹ See further Annex, Regulation 21. ²⁰² See further Annex, Regulation 23.

²⁰³ Annex, Regulation 18. These plans are to be developed in accordance with guidelines issued by IMO.

²⁰⁴ Annex, Regulation 19. ²⁰⁵ See generally the *Nuclear Law Bulletin* published by the OECD.

substances, placed in a special category of activities dealt with by international hazardous substances regulation, often termed 'ultrahazardous activities'.²⁰⁶ Although the use and proliferation of nuclear weapons have long attracted international concern, in the years following the Second World War use of nuclear technology for energy production was viewed more positively. This was reflected in the creation of the International Atomic Energy Agency (IAEA) in 1956 with the objective 'to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world'.²⁰⁷ Following the Chernobyl accident in 1986, the IAEA and the international regulation of nuclear activities underwent a substantial reorientation. Presently, the area is receiving renewed attention as nuclear energy enjoys a resurgence as a low emissions technology in a world increasingly concerned with the effects of climate change.²⁰⁸

The international regulation of radioactive substances commenced with the establishment in 1955 by the UN General Assembly of the Scientific Committee on the Effects of Atomic Radiation (UNSCEAR),²⁰⁹ followed by the creation of the IAEA.²¹⁰ The other principal international institutions exercising competence in the field of radioactive substances are the European Atomic Energy Agency (EURATOM), established in 1957, and the Nuclear Energy Agency of the OECD, also established in 1957.

Specialised international treaty obligations concerning nuclear materials commenced with the adoption of treaties on liability for nuclear damage²¹¹ and the protection of workers. Subsequent agreements were adopted on atmospheric nuclear testing;²¹² the use and proliferation of nuclear weapons;²¹³ border area cooperation; cooperation on nuclear safety and research; the protection of nuclear material; and nuclear emergencies. Disposal of radioactive waste is also regulated,²¹⁴ and some regions have been designated by states as nuclear-free zones. Under the auspices of the IAEA, several international conventions have been adopted, including treaties on the Physical Protection of Nuclear Material (1980),²¹⁵ Early Notification of a Nuclear Accident (1986),²¹⁶ Assistance in the Case of Nuclear Accident or Radiological Emergency (1986),²¹⁷ Nuclear Safety (1994)²¹⁸ and the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997).²¹⁹

²⁰⁶ On the concept of ultrahazardous activities, see n. 9. ²⁰⁷ IAEA Statute, Art. II.

²⁰⁸ However, the release of radioactive contamination by the stricken Fukushima nuclear power plant following the earthquake and tsunami of March 2011 has seemingly dampened the enthusiasm of nations with respect to the introduction or expansion of nuclear sources of energy.

²⁰⁹ UNGA Res. 913 (X), 3 December 1955.

²¹⁰ 23 October 1956, in force 29 July 1957, 276 UNTS 3, subsequently amended; see Chapter 3, pp. 78–9.

²¹¹ Chapter 16, pp. 773–4. ²¹² Chapter 7, pp. 255–7.

²¹³ Treaty on the Non-Proliferation of Nuclear Weapons, 1 July 1968, in force 5 March 1970, 729 UNTS 161 ('nuclear weapon parties' agree not to transfer to 'non-nuclear weapon parties' any nuclear weapons or devices, or to assist the latter to manufacture, acquire or control such weapons or devices, and 'non-nuclear weapon parties' undertake to submit themselves to verification safeguards under the auspices of and in agreement with the IAEA). In 1995, the Treaty's application was extended indefinitely: 1995 Review and Extension Conference of Parties to NPT, Annex, Decision 3, 34 ILM 959 (1995).

²¹⁴ See pp. 615–18. ²¹⁵ 3 March 1980, in force 8 February 1987, 18 ILM 1419 (1979).

²¹⁶ 26 September 1986, in force 27 October 1986, 1457 UNTS 133.

²¹⁷ 26 September 1986, in force 26 February 1987, 1457 UNTS 133.

²¹⁸ 17 June 1994, in force 24 October 1996, 33 ILM 1514.

²¹⁹ 5 September 1997, in force 18 June 2001, 36 ILM 1431 (1997).

Nuclear Safety

The IAEA is required by its Statute to 'establish or adopt . . . standards of safety for protection of health and minimisation of danger to life and property' (including such standards for labour conditions).²²⁰ It has adopted, with the assistance of the International Commission on Radiological Protection (ICRP) and other organisations, instruments on nuclear safety which are binding upon itself and must be applied in respect of its own research operations, but which are not binding upon its member states or third parties. This compares unfavourably with EURATOM and the OECD's Nuclear Energy Agency, which have the power to adopt binding acts. In practice, however, many IAEA standards are relied upon by states in developing and implementing national legislation and standards. The instruments that the IAEA may adopt as part of its Safety Standards series include Safety Fundamentals, Safety Requirements, and Safety Guides.²²¹ These concern four thematic areas – the safety of nuclear facilities, radiation protection and the safety of radiation sources, safe management of radioactive waste, and safe transport of radioactive materials – as well as issues of general safety relating to government organisation, siting, design, operation and quality assurance. Significant instruments include the Basic Safety Standards that have been adopted for Radiation Protection,²²² the Regulations for Safe Transport of Radioactive Material,²²³ the Radioactive Waste Safety Standards²²⁴ and the General Safety Requirements Governing Radiological Emergency.²²⁵ In September 1991, the General Conference of the IAEA invited its Director General to prepare an outline of the possible elements of a nuclear safety convention.²²⁶ An Expert Group subsequently identified a tentative list of obligations to be included in a nuclear safety convention, including a legislative framework for the regulation of civil nuclear facilities and activities of the nuclear fuel cycle; education and training of employees; emergency plans; safety (including siting, design, construction, commissioning and decommissioning); safe operation and maintenance; continuous safety surveillance; safe management and disposal of waste; and the sharing of information.²²⁷

1994 Nuclear Safety Convention

In June 1994, the Convention on Nuclear Safety was adopted under the auspices of the IAEA.²²⁸ The Convention has three objectives: to achieve and maintain a high level of nuclear safety worldwide; to establish and maintain effective defences in nuclear installations against potential radiological hazards to protect individuals, society and the environment from the harmful effects of ionising radiation; and to prevent accidents with radiological consequences and to mitigate

²²⁰ IAEA Statute, Art. III(A)(6).

²²¹ IAEA, 'IAEA Safety Standards', www-ns.iaea.org/standards/default.asp?s=11&tl=90&tw=1

²²² Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards Series No. GSR Part 3, published 19 July 2014.

²²³ Series No. SSR-6, published 22 October 2012.

²²⁴ *Disposal of Radioactive Waste*, Series No. SSR-5 (IAEA, 2011); *The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste*, Series No. GSG-3 (IAEA, 2013); on radioactive waste generally, see p. 613.

²²⁵ *Preparedness and Response for a Nuclear or Radiological Emergency*, Series No. GSR Part 7 (IAEA, 2015).

²²⁶ IAEA GC(XXXV)/res./553 (1991).

²²⁷ Report of the Expert Group on Outline of the Possible Elements for an International Convention on Nuclear Safety, 13 December 1991, reprinted in Report by the Director General on Implementation of General Conference Resolution GC(XXXV)/res./553, GOV/2567 (1992).

²²⁸ Vienna, 17 June 1994, in force 24 October 1996; seventy-seven states and Euratom are party; M. Kamminga, 'The IAEA Convention on Nuclear Safety', 44 *International and Comparative Law Quarterly* 872 (1995).

such consequences should they occur.²²⁹ Parties are required to establish a national regulatory body and to establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations, providing, *inter alia*, for the establishment of applicable national safety requirements and regulations, a system of licensing, a system of regulatory inspection and assessments, and the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation.²³⁰ Parties must give effect to 'general safety considerations' by prioritising safety, and must: ensure adequate financial and human resources; implement quality assurance programmes; carry out comprehensive and systematic safety assessments; ensure that radiation exposure to workers and the public is kept as low as reasonably achievable (and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits); and establish on-site and off-site emergency preparedness plans.²³¹ In relation to safety, siting should be evaluated by reference to factors likely to affect safety for the projected lifetime of the installation and for impacts on individuals, society and the environment; design and construction should provide for 'several reliable levels and methods of protection' against the release of radioactive materials, technologies incorporated in the design and construction should be proven by experience or qualified by testing or analysis, and the design should allow for reliable, stable and easily manageable operation. Minimum standards are to be applied with regard to operation, including the principle that the generation of radioactive waste resulting from the operation of a nuclear installation should be kept to the minimum practicable for the process concerned, in terms of activity and volume.²³² These obligations are characterised by their generality, by the failure to make reference to any of the IAEA's own international standards, and by the absence of any commitment to established and broadly accepted environmental requirements, such as environmental impact assessment. Compliance is also an issue in the absence of a non-compliance mechanism or any procedure for independent verification and inspection. At most, the Convention requires parties to meet periodically to review and discuss national reports on measures taken to implement their obligations.²³³

In light of some of the failings of the Convention revealed by the 2011 accident at the Fukushima Daiichi Nuclear Power Plant in Japan, the Contracting Parties adopted the Vienna Declaration on Nuclear Safety at their meeting in February 2015.²³⁴ This non-binding instrument sets out principles regarding the design, siting and safety assessment of nuclear power plants and calls for national regulations and requirements to take account of the IAEA Safety Standards.

1997 Joint Safety Convention

Three years after the conclusion of the Nuclear Safety Convention, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997 Joint Safety Convention) was adopted, also under IAEA auspices. Its objectives are to achieve and maintain a high level of safety worldwide in spent fuel and radioactive waste management, to ensure that during all stages of spent fuel and radioactive waste management there are

²²⁹ Art. 1. A 'nuclear installation' is 'any land-based civil nuclear power plant under its jurisdiction including such storage, handling and treatment facilities for radioactive materials as are on the same site and are directly related to the operation of the nuclear power plant' (Art. 2(i)).

²³⁰ Arts. 7 and 8. ²³¹ Arts. 10–16. ²³² Arts. 17–19. ²³³ Art. 22.

²³⁴ CNS/DC/2015/2/Rev.1 (9 February 2015).

effective defences against potential hazards to protect against harmful effects of ionising radiation, and to prevent accidents.²³⁵ The Convention applies to spent fuel management when the spent fuel results from the operation of civilian nuclear reactors, including certain discharges: it does not cover spent fuel held at reprocessing facilities as part of a reprocessing activity, or waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle, or the safety of management of spent fuel or radioactive waste within military or defence programmes (unless the contracting party declares otherwise).²³⁶ The 1997 Convention addresses the safety of spent fuel management²³⁷ and of radioactive waste management²³⁸ (addressing general requirements, existing facilities, siting, design and construction, safety assessment, operation, disposal of spent fuel and institutional measures after closure). With regard to general safety provisions, it includes similar provisions to the 1994 Convention in relation to the adoption of a legislative and regulatory framework, a regulatory body and responsibilities of the licence holder, as well as requirements in relation to human and financial resources, quality assurance and operational radiation procedure, emergency preparedness and decommissioning.²³⁹

It is noteworthy that, unlike the 1994 Convention, the 1997 Convention refers to international standards: in relation to radiation protection, for example, it requires each party to ensure that 'no individual shall be exposed, in normal situations, to radiation doses which exceed national prescriptions for dose limitation which have due regard to internationally endorsed standards on radiation protection'.²⁴⁰ The 1997 Convention also requires a party involved in transboundary movement to 'take the appropriate steps to ensure that such movement is undertaken in a manner consistent with the provisions of this Convention and relevant binding international instruments', and commits parties to a system of prior notification and consent.²⁴¹

Transport

Beyond the requirements of the 1997 Joint Safety Convention governing transboundary movements of spent fuel and radioactive waste, the provisions of the 1980 Convention on the Physical Protection of Nuclear Material apply to nuclear material used for peaceful purposes when being transported internationally and, to a more limited extent, the domestic use, storage and transport of nuclear material used for peaceful purposes.²⁴² The Convention requires parties to ensure as far as practicable that nuclear material in international transport is protected in accordance with the requirements set forth in Annex I, and that nuclear material shall not be exported, imported or permitted transit through the territory unless assurances have been received that the nuclear material will be protected at Annex I levels.²⁴³ The party responsible for receiving such assurances must identify and inform in advance transit states, as well as states whose airports or seaports the nuclear material is expected to enter.²⁴⁴ Parties must identify and share information on their central authority having responsibility for the physical protection of nuclear material, cooperate in the event of theft, robbery or other unlawful taking, and cooperate and consult on

²³⁵ Vienna, 5 September 1997, in force 18 June 2001, 36 ILM 1431 (1997), Art. 1; forty-one states and Euratom are party.

²³⁶ Art. 3. ²³⁷ Arts. 4–10. ²³⁸ Arts. 11–17. ²³⁹ Arts. 18–26. ²⁴⁰ Art. 24(1)(ii) and (2)(ii). ²⁴¹ Art. 27.

²⁴² Vienna and New York, 3 March 1980, in force 8 February 1987, IELMT 980:18, Art. 2(1) and (2); 152 states and Euratom are party.

²⁴³ Arts. 3 and 4(1)–(3). These provisions do not apply to domestic activities. Annex I sets out 'Levels of Physical Protection to be Applied in International Transport of Nuclear Materials as Categorised in Annex II'.

²⁴⁴ Art. 4(5).

the design, maintenance and improvement of physical protection systems.²⁴⁵ The Convention establishes a range of offences to be made punishable by each state, including theft or robbery or threats to use nuclear material to cause death or injury or property damage (but not environmental damage), and provides for jurisdiction over offences, and rules on detention, prosecution and extradition, as well as assistance between parties in criminal proceedings.²⁴⁶ Interestingly, and rarely, the Convention has a dispute settlement clause providing for the compulsory jurisdiction of the ICJ.²⁴⁷

In July 2005, a conference was convened to amend the Convention in order to strengthen its provisions relating to nuclear security.²⁴⁸ In response to heightened concerns over the possibility of nuclear terrorism, the Convention Amendment – which entered into force on 8 May 2016 – obliges states parties to establish ‘an appropriate physical protection regime’ for nuclear facilities and nuclear materials under their jurisdiction to protect against theft or sabotage.²⁴⁹ This obligation of protection extends to the international transport of nuclear materials until responsibility for such materials is properly transferred to another state.

Given that nuclear materials and fuel are often carried by sea, the IMO has also played a role in developing international regulation relating to nuclear safety in transport. In 1993, the IMO Assembly adopted a voluntary Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on Board Ships (INF Code).²⁵⁰ The INF Code recommends how certain materials should be carried, including specifications for ships. The material covered by the Code includes irradiated nuclear fuel, plutonium and high-level radioactive wastes, and the Code applies to all ships carrying INF cargo except warships, naval auxiliary ships or other ships used only on government non-commercial service. The Code became legally binding with effect from 1 January 2001.²⁵¹ Non-binding instruments adopting guidelines and recommendations for maritime aspects of radioactive substances have also been adopted by IMO²⁵² and the IAEA.²⁵³

Protection of Workers and the Public

Beyond the IAEA Safety Standards,²⁵⁴ the 1960 ILO Convention (No. 115) Concerning the Protection of Workers Against Ionising Radiations aims to ensure effective protection of workers against ionising radiations.²⁵⁵ Their exposure must be restricted to the lowest practicable level, and parties must fix maximum permissible doses of radiation that may be received and maximum permissible amounts that can be taken into the body for workers directly engaged in radiation work, as well as others who may be exposed.²⁵⁶ The Convention provides for

²⁴⁵ Art. 5. ²⁴⁶ Arts. 7–14. ²⁴⁷ Art. 17.

²⁴⁸ Convention on the Physical Protection of Nuclear Material (CPPNM) Conference, Vienna, 4–8 July 2005.

²⁴⁹ Amendment to the Convention on the Physical Protection of Nuclear Material, GOV/INF/2005/10-GC(49)/INF/6, in force 8 May 2016, Art. 2A.

²⁵⁰ IMO Res. A.748(18) (1993), as amended. In 2001, the INF Code was made mandatory and renamed the International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Waste on Board Ships. The Code’s regulations address, inter alia, damage stability, fire protection, structural considerations, cargo securing arrangements, radiological protection equipment and management, training and shipboard emergency plans.

²⁵¹ IMO Res. MSC.88(71) (27 May 1999), as amended.

²⁵² IMO Code of Safety for Nuclear Merchant Ships, IMO Res. A.491(XII), Part A (19 November 1981).

²⁵³ Regulations for the Safe Transport of Radioactive Material (2012). ²⁵⁴ See p. 595.

²⁵⁵ Geneva, 22 June 1960, in force 17 June 1962, 431 UNTS 41, Art. 3(1). ²⁵⁶ Arts. 5, 6(1), 7 and 8.

warnings to be used to indicate radiation hazards, the instruction of workers on precautions, the monitoring of workers and workplaces, and regular medical examinations.²⁵⁷

Border Area Cooperation

One of the most contentious issues regarding nuclear energy and radioactive substances has been the obligations of states constructing facilities in areas close to the border with other states. Controversies have arisen between the United Kingdom and Ireland over a proposed nuclear reprocessing plant at Sellafield adjacent to the Irish Sea,²⁵⁸ in relation to a proposal to dispose of Taiwanese nuclear waste in North Korea at sites bordering South Korea, and in respect of the Temelin nuclear power plant in the Czech Republic, fifty miles from the border with Austria.²⁵⁹ Proposals such as these raise the question of the extent to which the state building the new facility must consult with neighbouring states and take into account their concerns about potential health and environmental effects in decision-making.

Several bilateral and other treaties promote consultations and other information sharing on the construction of nuclear power plants in border areas.²⁶⁰ A typical example is the 1980 Agreement Between Spain and Portugal on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity of the Frontier, which provides that 'the competent authorities of the constructor country shall notify the neighbouring country of applications for licences for the siting, construction or operation of nuclear installations in the vicinity of the frontier which are submitted to them'.²⁶¹ More generally, Article 17 of the 1994 Nuclear Safety Convention and Article 13 of the 1997 Joint Safety Convention commit parties to consult with other parties in the vicinity of a proposed nuclear installation or facility, in so far as they are likely to be affected by that installation or facility. Together with the general requirements of international law relating to prevention and notification, as well as environmental assessment, there is now sufficient treaty and other state practice to indicate that customary international law requires states that are planning nuclear activities which might entail a significant risk of transfrontier pollution to give early advice to any state affected and to enter into good faith consultations at the request of such a state.²⁶²

Emergencies

Following the Chernobyl accident, treaties on emergency notification and assistance were negotiated at the IAEA. The 1986 IAEA Convention on Early Notification of a Nuclear Accident (1986 Notification Convention)²⁶³ was modelled on existing IAEA guidelines²⁶⁴ and

²⁵⁷ Arts. 9–12. ²⁵⁸ See the discussion of the MOX litigation at Chapter 6, p. 216.

²⁵⁹ For a discussion, see R. Axelrod, 'Democracy and the Global Nuclear Renaissance: From the Czech Republic to Fukushima', in *The Global Environment: Institutions, Law and Policy* (2015, 4th edn), 305–29.

²⁶⁰ See e.g. France–Belgium Agreement on Radiological Protection Concerning the Installations of the Nuclear Power Station of the Ardennes, 7 March 1967, 588 UNTS 227; Guidelines for Nordic Co-operation Concerning Nuclear Installations in the Border Areas, 15 November 1976; Denmark–Federal Republic of Germany, Agreement Relating to Exchange of Information on Construction of Nuclear Installations Along the Border, 4 July 1977, 17 ILM 274 (1978).

²⁶¹ Agreement Between Portugal and Spain on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity of the Border, Lisbon, 31 March 1980, in force 13 July 1981, Art. 2.

²⁶² See e.g. 1982 ILA Montreal Rules, Arts. 6 and 7; 1987 IDI Resolution, Art. 8(1); on the principle of good-neighbourliness, see Chapter 6, pp. 213ff.; on the provision of information, see Chapter 15.

²⁶³ 26 September 1986, in force 27 October 1986, 25 ILM 1370 (1986); see also Chapter 15, pp. 701–3.

²⁶⁴ IAEA Guidelines on Reportable Events, Integrated Planning and Information Exchange in a Transboundary Release of Radioactive Material, IAEA Doc. INFCIRC/321 (January 1985).

supplemented the bilateral and other treaties already adopted.²⁶⁵ The 1986 Notification Convention has been followed by numerous bilateral and regional arrangements. The 1986 IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986 Assistance Convention)²⁶⁶ was also modelled on existing IAEA guidelines²⁶⁷ and bilateral and other regional arrangements.²⁶⁸ It is intended to 'facilitate prompt assistance in the event of a nuclear accident or radiological emergency to minimise its consequences and to protect life, property and the environment from the effects of radioactive releases'.²⁶⁹ The 1986 Assistance Convention applies whether or not the accident occurred within the requesting state's territory or jurisdiction, and requires requesting states to specify the scope and type of assistance they require and to provide any information.²⁷⁰ Once a state has received a request for information, it must promptly decide and notify the requesting state whether it is in a position to render the assistance requested and the scope and terms of assistance it might provide, and to identify and notify the IAEA of experts, equipment and material which could be made available, and the terms on which it will provide assistance.²⁷¹ The IAEA's responsibilities include making available appropriate resources for emergency purposes, transmitting information about resources, and if requested, coordinating available assistance at the national level.²⁷² The 1986 Assistance Convention also includes administrative provisions on the direction and control of assistance, competent national authorities, reimbursement of costs, confidentiality of information, and rules on privileges, immunities, claims and compensation relating to persons or property injured or damaged in the course of providing assistance.²⁷³

The 1986 Assistance Convention clearly marked a step in the right direction, removing many of the administrative barriers that frequently limit the effectiveness of international assistance in emergency situations. Nevertheless, it has been criticised for emphasising the protection of the assisting state: Argentina, for example, noted that under Article 10(2) the state receiving assistance is to be held responsible for all damage suffered by the assisting state, but the assisting state apparently assumes no responsibility for any damage which it might cause.²⁷⁴ Furthermore, Article 7, on the reimbursement of costs, has the result that a state which caused a nuclear accident and which agrees to provide assistance to another affected state has the right to require reimbursement of assistance costs. This seems to be unsatisfactory, and led the representative of Luxembourg to conclude that the fundamental question of responsibility had not been properly resolved.²⁷⁵

²⁶⁵ See e.g. Federal Republic of Germany–Luxembourg, Agreement on the Exchange of Information in Case of Accidents which Could Have Radiological Consequences, 2 March 1978, 29 IPE 251; France–Switzerland, Agreement on the Exchange of Information in Case of Accidents which Could Have Radiological Consequences, 18 October 1979, 27 IPE 382; Finland–Soviet Union, Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to Nuclear Facilities, 7 January 1987, IAEA LegSer No. 15, 187; Sweden–Soviet Union, Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to Nuclear Facilities, 1 January 1988, IAEA LegSer No. 15, 407; see generally the list cited in E. Brown Weiss, P. C. Szasz and D. B. Magraw, *International Environmental Law: Basic Instruments and References* (Dobbs Ferry, NY: Transnational, 1992).

²⁶⁶ Vienna, 26 September 1986, in force 26 February 1987, 25 ILM 1377 (1986).

²⁶⁷ Guidelines for Mutual Emergency Assistance Arrangements in Connection with a Nuclear Accident or Radiological Emergency, IAEA Doc. INFCIRC/310 (January 1984).

²⁶⁸ See e.g. Nordic Mutual Emergency Assistance Agreement in Connection with Radiation Accidents, 17 October 1963, 525 UNTS 75.

²⁶⁹ Art. 1(1). ²⁷⁰ Arts. 1(1) and 2(2). ²⁷¹ Art. 2(3) and (4). ²⁷² Art. 2(6). ²⁷³ Arts. 3, 4, 6, 7, 8 and 10.

²⁷⁴ See the comment of the representative of Argentina at the Final Plenary Meeting of Governmental Experts, 15 August 1986, IAEA Doc. GC(SPL.I)/2, Annex V, 18 (1986).

²⁷⁵ *Ibid.*, 28.

Nuclear Weapons and Testing, and Nuclear-Free Zones

While perceptions of the environmental risks associated with nuclear power have fluctuated over time, nuclear weapons and their potential proliferation have long been viewed as posing an important international problem, including from an environmental perspective. As a consequence, the acquisition, use and testing of nuclear weapons has been addressed by a number of international conventions. They have also been the subject of various proceedings before the ICJ which, ironically perhaps, have made a rather significant contribution to the development of international environmental law.²⁷⁶

Aside from the 1968 Treaty on the Non-Proliferation of Nuclear Weapons,²⁷⁷ the objectives of the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water include the desire to 'put an end to the contamination of man's environment by radioactive substances'.²⁷⁸ To that end, the parties have undertaken to prohibit, and not to participate in or encourage, any nuclear weapon test or other nuclear explosion at any place under their jurisdiction or control in the atmosphere, outer space, or under water or in any other environment if it causes radioactive debris to be present outside the territorial limit of the state under whose jurisdiction or control it is conducted.²⁷⁹ The 1963 Treaty allows underground nuclear tests, and does not establish institutional arrangements or mechanisms for verification and compliance. In 1991, an amendment conference was convened to widen the scope of the treaty to include underground testing and establish compliance controls as part of a comprehensive test ban treaty, but no amendments were adopted.²⁸⁰ The 1996 Comprehensive Nuclear Test Ban Treaty (1996 CTBT) commits parties 'not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control', and to refrain from 'causing, encouraging, or in any way participating in the carrying out of any nuclear weapon test explosion or any other nuclear explosion'.²⁸¹ The 1996 Treaty (which will not come into force until it receives ratification from nuclear powers such as the United States and China) establishes a comprehensive verification and inspection system.

The 1971 Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Sub-Soil Thereof prohibits the placing of nuclear weapons or any other type of weapon of mass destruction, as well as related structures and facilities, on the seabed and ocean floor and in the subsoil beyond the outer limit of the seabed zone.²⁸² The Treaty establishes a verification procedure leading ultimately to the reference of disputes to the UN Security Council.²⁸³ In 1988, the UN General Assembly called on the UN Conference on Disarmament to agree on an international convention prohibiting the use or threat of use of nuclear weapons under any circumstances, but this has not materialised on a global basis.²⁸⁴ At the regional level, however, nuclear-free zones have been established by treaty covering five regions: Latin America and the Caribbean, the South Pacific, South East Asia, Africa and Central Asia.

²⁷⁶ *Australia v. France, New Zealand v. France* (1974), Chapter 7, pp. 255–6, *New Zealand v. France* (1995), Chapter 6, pp. 209–10, and Chapter 14, p. 658; Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons* (1996), Chapter 6, p. 210.

²⁷⁷ See p. xlv. ²⁷⁸ 5 August 1963, in force 10 October 1963, 480 UNTS 43, Preamble. ²⁷⁹ Art. I(1).

²⁸⁰ PITBT/CONF.13/Rev.1 (1991). ²⁸¹ New York, 24 September 1996, not yet in force, 35 ILM 1439 (1996).

²⁸² 11 February 1971, in force 18 May 1972, UKTS 13 (1973), Art. 1(1). ²⁸³ Art. III. ²⁸⁴ UNGA Res. 43/76 (1988).

The 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco) prohibits the testing, use, manufacture, production, acquisition, receipt, storage, installation, deployment or possession of any nuclear weapons by the parties in their territories.²⁸⁵ The Treaty does not prejudice the right of parties to use nuclear energy for peaceful purposes and to carry out, subject to certain conditions, explosions of nuclear devices for peaceful purposes.²⁸⁶ Compliance with the Treaty is to be ensured by the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL) and by a control system, including IAEA safeguards, to verify that devices and facilities intended for peaceful uses of nuclear energy are not being used in the testing or manufacture of weapons, that the prohibited activities are not being carried out, and that explosions for peaceful purposes are compatible with the Treaty.²⁸⁷

The 1985 South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga) is designed to keep the South Pacific region 'free of environmental pollution by radioactive wastes and other radioactive matter'.²⁸⁸ Under the Treaty, each party agrees not to manufacture, acquire, possess or control any nuclear explosive device anywhere inside or outside the South Pacific Nuclear Free Zone; to prevent the stationing of nuclear explosive devices in their territory; to prevent the testing of nuclear explosive devices; and to prevent the dumping of radioactive wastes or matter in the Zone.²⁸⁹ Parties may only provide source or special fissionable material or related equipment or material to non-nuclear-weapon states which are subject to safeguards under Article III(1) of the 1968 Non-Proliferation Treaty or to nuclear weapon states subject to safeguard agreements with the IAEA.²⁹⁰ The Treaty establishes a control system that includes the application of IAEA safeguards to verify the non-diversion of nuclear material from peaceful nuclear activities to nuclear explosive devices.²⁹¹ Protocol 1 to the Treaty allows France, the United Kingdom and the United States to undertake to apply the prohibitions under Articles 3, 5 and 6 of the Treaty that relate to manufacture, stationing and testing to territories for which they are internationally responsible situated within the Zone.²⁹² Parties to Protocol 2 to the Treaty, which is open to signature by China, France, Russia, the United Kingdom and the United States, undertake not to use or threaten to use any nuclear explosive device against parties to the Treaty or any territory for which a state that has become a party to Protocol 1 is internationally responsible.²⁹³ Parties to Protocol 3, which is open to signature by the same five states, agree not to test any nuclear explosive device anywhere within the Zone.²⁹⁴

The 1996 Treaty on the Nuclear-Weapon-Free Zone in Africa (1996 Pelindaba Treaty) establishes an African nuclear-weapon-free zone and commits parties to renounce research on, or to develop, manufacture, stockpile or otherwise acquire, possess or have control over, any nuclear explosive device by any means anywhere, to prevent the stationing of nuclear explosive devices in its territory, and to prohibit the testing of nuclear explosive devices.²⁹⁵ Parties also commit to declare, dismantle, destroy or convert nuclear explosive devices and the facilities for their

²⁸⁵ 14 February 1967, in force 22 April 1968, 6 ILM 521 (1967), as amended, Arts. 1(2) and 4. ²⁸⁶ Arts. 17 and 18.

²⁸⁷ Arts. 7–16. ²⁸⁸ Rarotonga, 6 August 1985, in force 11 December 1986, 24 ILM 142 (1988), Preamble.

²⁸⁹ Arts. 3 and 5–7. Parties are free to decide whether to allow visits by ships or aircraft and transit of airspace and navigation by ships in their territorial sea or archipelagic waters (Art. 5(2)).

²⁹⁰ Art. 4(a). ²⁹¹ Art. 8(2)(c) and Annex 2.

²⁹² Protocol 1, Art. 1. The United Kingdom and France have ratified this Protocol.

²⁹³ Protocol 2, Art. 2. China, France, the United Kingdom and Russia have ratified this Protocol. The United States remains a non-party to this and the other protocols.

²⁹⁴ Protocol 3, Art. 1. China, France, the United Kingdom and Russia have ratified this Protocol.

²⁹⁵ Cairo, 1 April 1996, in force 15 July 2009, Arts. 1 and 3–5.

manufacture.²⁹⁶ Going beyond other regional arrangements, the 1996 Pelindaba Treaty also commits parties to give effect to the 1991 Bamako Convention, to prohibit the dumping of radioactive wastes and other radioactive matter anywhere within the African nuclear-weapon-free zone, and to apply measures of physical protection equivalent to those provided for in the 1980 Convention on Physical Protection of Nuclear Material and in IAEA recommendations and guidelines.²⁹⁷ Three Protocols address the non-use of nuclear weapons, the prohibition on weapons testing, and the application of IAEA safeguards.

The 1996 Pelindaba Treaty was adopted following a call by the UN General Assembly on all states not to test, manufacture, use or deploy nuclear weapons in Africa, and to refrain from transferring such weapons, scientific data or technical assistance, either directly or indirectly, in any way which could assist in the manufacturing or use of nuclear weapons.²⁹⁸ The UN General Assembly also endorsed the concept of a nuclear-weapons-free zone in South Asia and urged the states of South Asia to continue to make all efforts to establish a nuclear-weapons-free zone in their region.²⁹⁹ This led to the conclusion in 1995 of the Southeast Asia Nuclear Weapons-Free Zone Treaty (the Treaty of Bangkok) that establishes a nuclear-weapons-free zone extending over the territories, and, uniquely, the continental shelf and exclusive economic zones, of its ten states parties.³⁰⁰ More recently, in 2006, five states in Central Asia concluded the Treaty of Semipalatinsk establishing the Central Asian Nuclear Weapons Free Zone.³⁰¹ Obligations of parties under the two treaties are very similar to those under the other nuclear-weapons-free zone treaties and, like the Pelindaba Treaty, incorporate obligations on parties to apply particular IAEA safeguards.

Other Hazardous Activities

States and other members of the international community have accepted that the activities and substances identified in the preceding sections of this chapter pose sufficient risks to the environment and to human health to warrant the development and adoption of particularised international rules. At a general level, bodies such as the International Law Commission have also sought to codify and develop rules governing hazardous activities with the potential for significant adverse transboundary effects, including requirements for notification, consultation and prior risk assessment.³⁰²

Certain other activities are increasingly recognised as posing sufficient threats to the environment at the local, national, regional and global levels to warrant their special consideration by international organisations with a view to the development of international rules. The WSSD, for instance, addressed the need to develop sustainable agriculture,³⁰³ promote ecotourism³⁰⁴ and foster sustainable mining practices (in accordance with national regulations and taking into account significant transboundary impacts).³⁰⁵ Apart from rules on noise

²⁹⁶ Art. 6. ²⁹⁷ Arts. 7 and 10. ²⁹⁸ UNGA Res. 2033 (XX) (1965). ²⁹⁹ UNGA Res. 45/53 (1990).

³⁰⁰ 15 December 1995, in force 28 March 1997, 35 ILM 635 (1996); parties are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

³⁰¹ 8 September 2006, in force 21 March 2009, available at <http://disarmament.un.org>

³⁰² Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities 2001, *Yearbook of the International Law Commission* (2001-II), Part 2.

³⁰³ Plan of Implementation, para. 38; see also para. 39 (land degradation). ³⁰⁴ Para. 41.

³⁰⁵ Para. 44(b). Some of these topics are also touched on by the Sustainable Development Goals and their targets, including SDG 7 (access to energy) and SDG 12 (responsible production and consumption).

pollution,³⁰⁶ new international environmental norms are likely to be developed at the regional and global levels to address energy, mining, agriculture, transport and tourism. These may follow the approach taken by existing rules and guidelines adopted under the auspices of UNEP, the OECD and the EU.

Energy

In the past, energy generation, other than by nuclear sources, was the subject of limited attention, and even less action, by international organisations.³⁰⁷ In more recent times it has become an increasing focus of policy activity in line with the UN Secretary General's 2011 'Sustainable Energy for All' Initiative,³⁰⁸ and the commitment in Sustainable Development Goal 7 to secure access to affordable, reliable, sustainable and modern energy for all by 2030. The 2015 Paris Agreement – with its aim of holding global average temperature rise below 2 °C, pursuing efforts to limit temperature increases to 1.5 °C, and achieving net zero carbon in the second half of the century – contemplates a fundamental transition in the global energy system as necessary to achieve its objectives.³⁰⁹ Apart from the UNECE Committee on Sustainable Energy, which has a limited mandate and no power to make binding or other acts,³¹⁰ no UN body has responsibility for non-nuclear energy sources. The establishment of the International Renewable Energy Agency (IRENA) may go some way towards filling this gap.³¹¹ IRENA's constitutive statute states that its objective is to 'promote the widespread and increased adoption and the sustainable use of all forms of renewable energy'.³¹² Its activities mainly take the form of issuing policy recommendations, and the provision of information and research.³¹³

The environmental risks posed by energy use from fossil fuel sources (including coal, gas and oil), as well as certain non-renewable sources such as hydropower, remain essentially unregulated at the international level and beyond the scope of a concerted or coherent international regulatory regime. To the extent that fossil fuel use in energy generation is 'regulated' by international law, it is as an incidental aspect of the rules governing mainly atmospheric pollution and climate change (in particular SO₂, NO_x and greenhouse gas obligations), waste, and the use of environmental impact assessments (and even then only in respect of very large plants and not overall energy policy).

There is, however, a growing recognition that the significant impact which energy policy and use has on the environment requires it to be the subject of its own institutional arrangements and

³⁰⁶ See e.g. OECD Council Recommendation on Noise Abatement Policies, OECD C(78)73 (Final), 3 July 1978; and OECD Council Recommendation on Strengthening Noise Abatement Policies, OECD C(85)103, 20 June 1985. See also the rules adopted by the ILO (pp. 590–3) and the ICAO (Chapter 3, p. 78).

³⁰⁷ Energy was one of the most controversial issues addressed at UNCED. Despite the opposition of some states, the majority of states managed to ensure that some energy-related topics, including energy efficiency and the development and application of new and renewable sources of energy, were addressed in Agenda 21. At the WSSD, no agreement was reached on fixing a specified target for the use of renewable sources of energy. Para. 19(c) of the Plan of Implementation merely committed states to give 'a greater share of the energy mix to renewable energies'; and para. 19(e) called on states, 'with a sense of urgency, [to] substantially increase the global share of renewable energy sources'.

³⁰⁸ See www.se4all.org ³⁰⁹ Paris Agreement, Art. 2(1) and 4(1).

³¹⁰ For details of the Committee, see www.unece.org/energy/se/com.html

³¹¹ At a regional level, see also the Convention of the African Energy Commission, 11 July 2001, in force 13 December 2006, <http://afrec-energy.org/En/convention.html>

³¹² Statute of IRENA, Bonn, 26 January 2009, in force 8 July 2010, Art. II. 'Renewable energy' is defined to include bioenergy, geothermal, hydropower, ocean energy and solar and wind energy (Art. III).

³¹³ Art. IV.

substantive rules, which would be designed to develop national energy strategies, reduce the use of fossil fuel and wastage in energy distribution, develop renewable and other non-fossil fuel sources, and use energy more efficiently in homes and industry.³¹⁴ Guidance on the content of more specific future international energy-related legislation may be found in non-binding recommendations adopted by the OECD on various aspects of energy's impact on the environment,³¹⁵ and acts of the EU, which has adopted a range of measures on renewable energy, energy efficiency and conservation.³¹⁶ For the moment, the main global forum for addressing energy issues has been the Conference of the Parties to the Climate Change Convention, which is charged with keeping under review the commitments adopted under the Convention and developing new commitments on limiting emissions of greenhouse gases from fossil fuel sources.³¹⁷ In the Nationally Determined Contributions (NDCs) that governments will be required to submit under the 2015 Paris Agreement, it is likely that measures relating to energy generation will be an important feature.³¹⁸

Another regional initiative of potentially global scope is the 1994 Energy Charter Treaty, which establishes a legal framework to promote long-term cooperation in the energy field.³¹⁹ Recognising that state sovereignty and sovereign rights over energy resources must be exercised in accordance with and subject to the rules of international law, it commits parties to 'strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area', in pursuit of sustainable development and taking into account parties' obligations under those international agreements concerning the environment to which they are party.³²⁰ It commits parties to strive to take precautionary measures 'to prevent or minimize environmental degradation', and recognises that the polluter should, in principle, bear the cost of pollution, including transboundary pollution.³²¹ To those ends, it requires parties, inter alia, to: take account of environmental considerations throughout the formulation and implementation of their energy policies; more fully reflect environmental costs and benefits; encourage cooperation in international environmental standards; develop and use renewable energy sources; promote public awareness of the environmental impacts of energy systems; promote energy-efficient and environmentally sound technologies, practices and processes; and promote the transparent assessment at an early stage and prior to decision, and subsequent monitoring, of environmental impacts of environmentally significant energy investment projects.

The Charter also has a Protocol on Energy Efficiency and Related Environmental Aspects, which aims to promote energy efficiency policies consistent with sustainable development, to create conditions which induce producers and consumers to use energy as economically, efficiently and environmentally soundly as possible, and to foster cooperation in the field of

³¹⁴ See IUCN, UNEP and WWF, *Caring for the Earth* (1991), 89–95.

³¹⁵ OECD Council Recommendation on Reduction of Environmental Impacts from Energy Production and Use, OECD C (76)162 (Final), 12 October 1976; OECD Council Recommendations on Reduction of Environmental Impacts from Energy Use in the Household and Commercial Sectors, OECD C(77)109 (Final), 21 September 1977; and OECD Council Recommendation on Environmentally Favourable Energy Options and Their Implementation, OECD C(85)102, 20 June 1985.

³¹⁶ See also the Energy Protocol to the 1991 Alpine Convention, 22 December 2005, OJ L337, 22 December 2005, 36.

³¹⁷ Chapter 7, pp. 300–7. ³¹⁸ Paris Agreement, Art. 4.

³¹⁹ 17 December 1994, in force 16 April 1998, 34 ILM 360 (1995). The treaty has fifty-four members, mainly drawn from European states, but is open to accession from outside the European region.

³²⁰ Arts. 18 and 19(1). ³²¹ *Ibid.*

energy efficiency.³²² It commits parties to establish energy-efficiency policies, to create a legal and regulatory framework which promotes energy efficiency, to develop, implement and update programmes, and to cooperate internationally.³²³ In May 2015, parties to the Energy Charter adopted a non-binding International Energy Charter declaration aimed at strengthening energy cooperation between the signatories and expanding the geographical scope of the Energy Charter.³²⁴

Mining

Despite its significant adverse environmental effects, mining has been the subject of few international rules (beyond environmental impact assessment and human rights requirements),³²⁵ with the significant exception of obligations imposed in the Antarctic region,³²⁶ in relation to deep seabed mining,³²⁷ and the new rules of the 2013 Minamata Mercury Convention regarding mercury mining. The impact of mining begins to be felt at the exploration stage, but becomes more significant during the extraction and metallurgical phases, where significant effects may occur for flora and fauna, sedimentation of rivers, acid and toxic drainage from tailings dumps and accidental overflow of waters, and in the pollution and toxic waste generated by the smelting process.³²⁸ Like energy, mining is generally regulated by international law only to the extent that it is incidentally addressed by rules developed more specifically to address the protection of flora and fauna, the disposal of wastes, air pollution and environmental impact assessments. Future international legislation on mining might be guided by the principles developed under non-binding guidelines such as those adopted by UNEP.³²⁹

Phosphate Lands in Nauru Case

In 1989, the ICJ was presented with an opportunity to consider some of the environmental aspects of mining in the *Case Concerning Certain Phosphate Lands in Nauru*,³³⁰ brought by Nauru against Australia. The issues raised by the case, which was settled by agreement between the parties in September 1993, included the extent of certain legal obligations on the use of natural resources, including the obligation to rehabilitate mined lands, and the land rights of indigenous inhabitants. Nauru is a central Pacific island with a landmass of twenty-one square kilometres and a population of approximately 6,000, which achieved independence in 1968. Despite its small size, it is rich in phosphate, which was discovered there in 1900, and

³²² Energy Charter Protocol on Energy Efficient and Related Environmental Aspects, Lisbon, 17 December 1994, in force 16 April 1998, 33 ILM 446 (1995), Art. 1.

³²³ Arts. 3(2) and 8(1).

³²⁴ International Energy Charter, The Hague, 20–21 May 2015, at www.energycharter.org/process/international-energy-charter-2015/overview

³²⁵ See M. Orellana, *Indigenous Peoples, Mining and International Law* (International Institute for Environment and Development, Mining, Minerals and Sustainable Development Project, 2002).

³²⁶ See 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) and 1991 Antarctic Environment Protocol, Chapter 13, pp. 671–3.

³²⁷ Chapter 11, p. 497.

³²⁸ See T. Wilde, 'Environmental Policies Towards Mining in Developing Countries', 10 *Journal of Energy and Natural Resources Law* 327 at 329–30 (1992).

³²⁹ UNEP, 'Conclusions of the Study of Legal Aspects Concerning the Environment Related to Offshore Mining and Drilling Within the Limits of National Jurisdiction', UNEP/GC/Dec./10/14VI, 31 May 1982, 7 *Environmental Policy and Law* 50.

³³⁰ *Case Concerning Nauru v. Australia* (Preliminary Objections) (1992) ICJ Reports 240.

subsequently the island became an important source of the substance for phosphate-poor countries like Australia and New Zealand.

From 1947 until 1968, Nauru had been a territory administered under a UN General Assembly approved Trusteeship Agreement between Australia, New Zealand and the United Kingdom. By the time it reached independence in 1968, large amounts of the phosphate had been mined and large parts of the island had been rendered uninhabitable. In May 1989, Nauru submitted an application to the ICJ asking it to declare Australia's responsibilities for breaches of international legal obligations relating to its phosphate mining activities in Nauru. Nauru claimed, inter alia, that Australia: had violated the 1947 Trusteeship Agreement and Article 76 of the UN Charter by contributing to the physical destruction of the island as a unit of self-determination accompanied by a failure to rehabilitate the land; had violated the principle of self-determination, occasioned by the literal disposal of the territorial foundation of the unit of self-determination accompanied by a failure to provide an adequate sinking fund to cover the costs of rehabilitating the mined lands; and had breached the obligation to respect the right of the Nauruan people to permanent sovereignty over natural resources, because a major resource was being depleted on grossly inequitable terms and the extraction of phosphate involved a physical reduction of the homeland of the people of Nauru. Nauru asked the Court to declare that Australia had incurred an international legal responsibility for breach of these and other obligations, and requested primarily a declaration of Australia's liability. Included among the five forms of loss identified as the basis of relief was the cost of rehabilitation of the phosphate lands worked out before 1 July 1967.

In June 1992, the Court found, by nine votes to four, that it had jurisdiction over the application and that the application was admissible, with the exception of one claim.³³¹ Some of the grounds raised by Australia, and the findings by the Court in respect thereof, are of some relevance to broader issues of international environmental law, including the waiver of environmental claims, the time period within which such claims should be brought, the conditions in which good faith principles will have been violated, and the issue of joint and several liability. In August 1993, Australia offered Nauru A\$107 million in full and final settlement of the claim, which sum was accepted by Nauru with an undertaking to discontinue proceedings and bring no further claims.³³² The Court did not have the opportunity to consider the merits, including the possibility of assessing the costs of rehabilitation. Nevertheless, it set out certain principles of some significance for the development of international environmental law. First, for the waiver of any claim, including an environmental claim, to be effective, it will need to be made in a clear and express form. Second, acts of international institutions (in this case, a General Assembly resolution) which have definitive legal effects will not discharge rights which might exist in regard to environmental and other claims in the face of clearly expressed differences of opinion which exist between states supporting such an act. Third, provided that certain minimum steps are taken to maintain a legal position and promote a legal claim, the passage of time will not necessarily render a claim inadmissible. Fourth, and particularly of significance in the environmental field, the question of whether states have 'joint and several liability' is to be distinguished from the question of whether one of those states may be sued alone in respect of a claim of a

³³¹ *Ibid.*

³³² *Australia–Republic of Nauru: Settlement of the Case in the International Court of Justice Concerning Certain Phosphate Lands in Nauru*, 32 ILM 1471 (1993).

breach of an international legal obligation, and the possibility that attributing responsibility to one state might have implications for the legal situation of other states concerned does not establish a bar to proceedings being brought against that one state.

Mercury Mining

The 2013 Minamata Mercury Convention has provisions controlling mercury supply, including limitations on specific sources of mercury such as primary mercury mining,³³³ as well as artisanal and small-scale gold mining. Article 3(3) bans new mercury mining in the territory of parties. For existing mercury mines, parties may only allow mining to continue for a period of up to fifteen years after the date of entry into force of the Convention for those parties.³³⁴ Moreover, during this period, mercury from such mining is subject to the restrictions on mercury use and mercury processes set out in Articles 4 and 5 of the Convention,³³⁵ and must be disposed of in accordance with Article 11, using operations which do not lead to recovery, recycling, reclamation, direct reuse or alternative uses. Article 7 and Annex C establish special measures for artisanal and small-scale gold mining and processing in which mercury amalgamation is used to extract gold from ore. In particular, each party that has artisanal and small-scale gold mining and processing within its territory is required to take steps to reduce, and where feasible eliminate, the use of mercury and mercury compounds in, and the emissions and releases to the environment of mercury from, such mining and processing.³³⁶

Agriculture

The impact of agriculture on the environment is well documented. Threats that are incidentally subject to international legal regulation include: expanding farms that destroy forests and wetlands; soil erosion; the use of pesticides that damage flora and fauna; release of greenhouse gas emissions from livestock and other farming practices; and chemical run-off and consequential contamination of freshwater resources from excessive fertiliser use.³³⁷ Agricultural practices are significantly influenced and affected by the rules of international law addressing the use of pesticides, the protection of watercourses, environmental assessment, the conservation of biodiversity, including forests, and increasingly rules under the international climate change regime. Nevertheless, agriculture is not subject to a coordinated regime of legal obligations which apply specific rules at the regional or global level, and which might prepare and implement strategies to use agricultural land optimally, control the use of fertilisers and pesticides, and promote proper land husbandry. While specific agreements address drought and desertification,³³⁸ the humane treatment of animals,³³⁹ and mountain farming in the European Alpine region,³⁴⁰ only non-binding instruments on the regulation of agricultural practices have been adopted by UNEP and the FAO. These address the use of environmental

³³³ Primary mercury mining is 'mining in which the principal material sought is mercury' (Art. 2(b)(i)). ³³⁴ Art. 3(4).

³³⁵ See pp. 583–5. ³³⁶ Art. 7(2).

³³⁷ K. Reytar, C. Hanson and N. Henniger, 'Indicators of Sustainable Agriculture: A Scoping Analysis', in *World Resources Report 2013–2015: Creating a Sustainable Food Future* (2016).

³³⁸ Chapter 10, pp. 433–4.

³³⁹ See European Convention for the Protection of Animals During International Transport (revised), Chisinau, 6 November 2003, CETS No. 193, in force 14 March 2006; European Convention for the Protection of Animals Kept for Farming Purposes, Strasbourg, 10 March 1976, CETS No. 87, in force 10 September 1978.

³⁴⁰ Mountain Farming Protocol to the 1991 Alpine Convention, 30 September 2006, OJ L271, 30 September 2006, 63.

impact assessment on agricultural activities,³⁴¹ and other environmental aspects of agricultural practices.³⁴² It remains to be seen how the WTO Agreement on Agriculture's exemption of environmental programmes from rules limiting governmental subsidies will be applied.³⁴³

Transportation

Transportation is a major contributor to fossil fuel use and a significant source of urban air pollution, sulphur dioxide emissions and greenhouse gas emissions. Roads and railways also make use of land in ways that can be particularly damaging to biodiversity. The regulation of environmental aspects of air and sea transport is a matter for the ICAO and the IMO respectively, but transportation by road and rail is not addressed by any UN body, or subject to a body of international rules which would allow the development of an integrated transport policy which takes account of the environmental consequences of the different modes of transport and the elaboration and implementation of fuel efficiency standards, emissions standards and waste-minimisation standards. In this regard, only the UNECE has adopted binding standards, which may provide a basis for the adoption of minimum standards in other regions and globally.³⁴⁴

Tourism

In recent years, tourism has begun to be the subject of a new body of rules aimed at addressing environmental degradation from this source. The adverse environmental effects of tourism and related recreational activities have led to the adoption of national and regional environmental standards,³⁴⁵ and at the international level restrictions have been imposed on tourism in the Antarctic region,³⁴⁶ and non-binding guidelines adopted by UNEP and the OECD.³⁴⁷

WASTES

The topic of wastes regulation is closely linked with that of hazardous substances and activities, given that processes involving such substances or activities often produce wastes that are harmful to the environment. Modern international instruments that seek 'environmentally sound management' of chemicals and wastes frequently adopt a life cycle approach that track substances from production to disposal.³⁴⁸ Despite the practical connections that exist between

³⁴¹ FAO, Comparative Legal Study on Environmental Impact Assessment and Agricultural Development, FAO Paper 2 (1982); FAO, Environmental Impact Assessment: Guidelines for FAO Field Projects (2012).

³⁴² Environmental Guidelines for the Formulation of National Soil Policies, UNEP EMG No. 7 (1983); Environmental Guidelines for Agricultural Mechanization, UNEP EMG No. 10 (1986); Environmental Guidelines for Agroforestry Projects, UNEP EMG No. 11 (1986); UNEP Environmental Guidelines for Farming Systems Research, UNEP EMG, No. 12 (1986).

³⁴³ 1994 Agreement, Annex 2, para. 12.

³⁴⁴ See Chapter 7, p. 260. See also Transport Protocol to the 1991 Alpine Convention, OJ L323, 8 December 2007, 15.

³⁴⁵ See Tourism Protocol to the 1991 Alpine Convention, OJ L337, 22 December 2005, 43. ³⁴⁶ Chapter 13, pp. 671-3.

³⁴⁷ OECD Council Recommendation, Environment and Tourism, OECD C(79)115, 8 May 1979; 1982 UNEP Environmental Guidelines for Coastal Tourism, UNEP EMG No. 6. See also UNEP's Tourism and Environment Programme, www.unep.fr/scp/tourism

³⁴⁸ See e.g. Sustainable Development Goal 12 on Sustainable Consumption and Production Patterns and UNEP, *Global Waste Management Outlook* (2015), 1.2, advocating the need to move from thinking about 'waste disposal' to 'waste management' and from 'wastes' to 'resources' as part of the 'circular economy'.

hazardous substances and waste generation, international rules governing wastes remain largely separate from those regulating hazardous substances and activities.

Defining Wastes

International legal regulation of waste began in the early 1970s with the adoption of two treaties that prohibited the disposal at sea of certain types of waste. This raised the difficulty of defining waste, a matter that continues to cause legal difficulties today. Human activity generates waste in solid, liquid and gaseous forms, and these wastes have tended to be categorised by regulatory instruments at the national and international level according to two characteristics: their source (municipal or industrial, including agricultural and mining); and/or their hazardous qualities (non-hazardous, hazardous and ultrahazardous). Within these categorisations, international legal instruments adopt a range of different definitions. One approach, adopted by the Cairo Guidelines, is to define waste by reference to national law,³⁴⁹ although this approach has not been widely followed. Other efforts establish internationally agreed definitions. Under the 1972 London Convention, wastes or other matters are defined broadly to include 'material and substance of any kind, form or description'.³⁵⁰ The 1989 Basel Convention, on the other hand, defines wastes by reference to their end use: they are 'substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law'.³⁵¹ Under this definition, a substance which is not to be disposed of (perhaps to be recycled) may not be waste.³⁵² The 1992 OSPAR Convention reversed the traditional approach by defining waste by reference to what it was not, rather than what it was,³⁵³ and the 1996 Protocol to the 1972 London Convention defines wastes and other matters as 'material and substance of any kind, form or description'.³⁵⁴ It is not apparent, however, that this shift in approach has permitted more effective international regulation by limiting the scope for definitional disagreements.

Municipal Waste

Municipal waste, which is not deemed to be hazardous,³⁵⁵ generally includes that generated by households, shops, offices and other commercial units, and includes paper and cardboard, glass,

³⁴⁹ See UNEP Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes (1987).

³⁵⁰ Art. III(4). The 1976 Barcelona Dumping Protocol adopted the same definition (Art. 3(2)).

³⁵¹ Art. 2(1). The 1991 Bamako Convention, Art. I(1), and the 1995 Waigani Convention, Art. 1, adopt a similar definition.

³⁵² A similar definition existed under EU law, which originally (in 1975) defined waste as 'any substance or object which the holder disposes of or is required to dispose of pursuant to the rules of national law' (Council Directive 75/442/EEC, Art. 1(a)). This definition caused practical problems because it allowed many substances to be excluded if the holder treated the substances other than by disposal. In 1990, the ECJ broadened the definition so that waste did not exclude 'substances and objects which are capable of economic re-utilisation' (Joined Cases C-206 and C-207/88, *Vessaso and Zanetti* [1990] ECR I-1461; see also Case C-359/88, *Zanetti and Others* [1990] ECR I-1509). The following year the definition was further amended to mean 'any substance or object . . . which the holder discards or intends or is required to discard' (Council Directive 75/442/EEC, as amended by Council Directive 91/156/EEC, OJ L78, 26 March 1991, 32, Art. 1(a)).

³⁵³ Art. 1(o); waste does not include human remains, offshore installations, offshore pipelines, and unprocessed fish and fish offal.

³⁵⁴ Art. 1(8).

³⁵⁵ However, municipal solid waste increasingly contains small quantities of hazardous wastes such as paint, garden pesticides, pharmaceuticals, certain detergents, personal care products, fluorescent tubes, waste oil, heavy

plastics, metals, organic matter and putrescible material. The generation of municipal wastes is closely related to levels of industrialisation and income: the median generation rates in high-income countries are about sixfold greater than in low-income countries.³⁵⁶ UNEP has estimated that the total amount of municipal solid waste generated globally is around 2 billion tonnes and there is some evidence that generation rates are beginning to stabilise or even decrease in high-income countries, suggesting a 'decoupling' of waste growth from economic growth.³⁵⁷ Rapid industrialisation has resulted in large increases in the generation of waste paper and plastic.³⁵⁸ The two main techniques for disposal of municipal waste are landfill (accounting for over 70 per cent in most OECD countries) and incineration.³⁵⁹ The main environmental problems related to landfill are the generation of methane (a greenhouse gas)³⁶⁰ and the production of leachates that may contaminate surface or groundwaters. Incineration contributes to air pollution by generating dust, acidic and greenhouse gases, vapourised metals, metal salts, and dioxins and furans.³⁶¹ In addition, solid wastes openly dumped on land represent a breeding ground for disease-causing organisms presenting a public health problem.³⁶²

Hazardous and Toxic Wastes (Industrial, Agricultural and Mining Waste and Sewage Sludge)
 Non-municipal waste tends to be categorised by reference to its source (industrial, mining or agricultural) and, in relation to the applicable rules, its characteristics (non-hazardous, hazardous, toxic, radioactive).³⁶³ Industrial wastes include general factory rubbish, packaging materials, organic wastes, acids, alkalis and metalliferous sludges. Mining wastes are a by-product of the extraction process and include topsoil, rock and dirt, which may be contaminated by metals and coal. Agricultural wastes comprise animal slurries, silage effluents, tank washings following pesticide use, and empty plastic packaging. Non-municipal wastes also include sewage sludge, which is produced by the treatment of industrial and domestic wastes and is often contaminated with heavy metals, organic chemicals, greases and oils. Many industrial and mining wastes are hazardous and require special treatment in their disposal. Another fast-growing stream of hazardous waste is e-waste from discarded electrical and electronic equipment, which may contain toxic materials such as mercury, lead and brominated flame retardants.³⁶⁴ The options for hazardous waste include physical or chemical treatment, incineration, landfill, sea disposal, storage or containment, and recycling, as well as reducing waste generation at source.

metal- containing batteries, print cartridges and waste electronic and electrical equipment which poses disposal problems if not segregated from non-hazardous waste streams (UNEP, *Global Waste Management Outlook*, 94).

³⁵⁶ UNEP, *Global Waste Management Outlook*, 3.3.1. See also UN-Habitat, *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010* (2010), 94.

³⁵⁷ UNEP, *Global Waste Management Outlook*, 3.2. See also World Bank, *What a Waste: A Global Review of Solid Waste Management* (2009).

³⁵⁸ UNEP, *Global Waste Management Outlook*, 3.3.

³⁵⁹ World Bank, *What a Waste: A Global Review of Solid Waste Management* (2009).

³⁶⁰ The IPCC estimates that solid waste management accounted for around 3 per cent of global greenhouse gas emissions in 2010 with most of that attributable to methane emissions from landfill (UNEP, *Global Waste Management Outlook*, 1.2).

³⁶¹ UNEP, *Environmental Data Report* (1991, 3rd edn), 336-7 and table 8.6. See also UNEP, *Global Environment Outlook GEO4: Environment for Development* (2007), 76.

³⁶² UNEP, *Global Waste Management Outlook*, 1.1. See also UN-Habitat, *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010* (2010), 94.

³⁶³ UNEP, *Global Waste Management Outlook*, Topic Sheet 7, 92ff.

³⁶⁴ Basel Convention Secretariat, E-Waste, www.basel.int/Implementation/Ewaste/Overview/tabid/4063/Default.aspx

Large quantities of organic waste, including sewage sludge, animal slurries and silage effluents are applied to agricultural land.³⁶⁵

The international legal regimes governing the transboundary movement of wastes apply different definitions of hazardous wastes. The 1989 Basel Convention defines hazardous wastes as those belonging to any of the forty-five categories of waste set out in Annex I to the Convention, unless they do not possess any of the characteristics contained in Annex III, as well as wastes defined as or considered to be hazardous wastes under the legislation of export, import or transit parties.³⁶⁶ 'Other wastes', also subject to certain requirements under the 1989 Basel Convention, are those that belong to any category contained in Annex II.³⁶⁷ The 1989 Basel Convention does not apply to radioactive wastes which 'are subject to other international control systems, including international instruments, applying specifically to radioactive materials', or to wastes which 'derive from the normal operations of a ship, the discharge of which is covered by another international instrument'.³⁶⁸ Under this approach, it is possible that certain radioactive wastes would not be subject to an 'international control system' within the meaning of the Convention, and could therefore be included as hazardous waste and subject to the Convention.

Under the 1991 Bamako Convention, 'hazardous wastes' are defined more broadly in four categories. These are: wastes belonging to the categories identified in Annex I, which combines Annexes I and II to the Basel Convention; wastes so defined or considered by national legislation of the party of import, export or transit; wastes which possess any of the characteristics contained in Annex II; and 'hazardous substances which have been banned, cancelled or refused registration by government regulatory action, or voluntarily withdrawn from registration in the country of manufacture, for human health or environmental reasons'.³⁶⁹ The Convention applies to radioactive wastes that are subject to any international control systems applying to radioactive materials, but does not apply to ship wastes.³⁷⁰

The 1986 Mexico–United States Hazardous Waste Agreement defines hazardous wastes as 'any waste, as designated or defined by the applicable designated authority pursuant to national policies, laws or regulations, which, if improperly dealt with in activities associated with them, may result in health or environmental damage'.³⁷¹ Under EU law, hazardous wastes are defined by Directive 91/689/EEC as those wastes which have one or more of the sixteen properties listed in Annex III.³⁷²

³⁶⁵ UNEP, *Global Waste Management Outlook*, 142ff.

³⁶⁶ Art. 1(1). Parties must inform the secretariat of wastes defined as hazardous under their national legislation (Art. 3). Annex I lists categories of wastes to be controlled by reference to eighteen waste streams and twenty-seven constituents. A similar definition is found in the Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific, Waigani, 16 September 1995, in force 21 October 2001, 2161 UNTS 93 (Waigani Convention).

³⁶⁷ Art. 1(2); Annex II lists household wastes and residues from the incineration of household wastes.

³⁶⁸ Art. 1(3) and (4).

³⁶⁹ Art. 2(1)(a)–(d). Similar definitions are found in the Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal, Izmir, 1 October 1996, not yet in force, www.unep.ch/regionalseas/main/med/medhaz.html, Art. 3; and the Central America Regional Agreement on the Transboundary Movement of Hazardous Waste, 11 December 1992, in force 17 November 1995, UN Doc. UNEP/CHW/C.1/INF.2 (October 1993), Art. 1(1).

³⁷⁰ Art. 2(2) and (3).

³⁷¹ Art. 1(2). But cf. the 1986 Canada–United States Hazardous Waste Agreement, Ottawa, 28 October 1986, in force 8 November 1986, TIAS 11099, Art. 1(b).

³⁷² Directive 2008/98/EC, OJ L 312, 22.11.2008, p. 3–30, Art. 3(2) and Annex III. These properties include whether the wastes are explosive, oxidising, highly flammable, flammable, irritant, harmful, toxic, carcinogenic, corrosive,

Radioactive Waste

Radioactive wastes, which are generally subject to special rules, are the product of nuclear power generation, military sources, and medical, industrial and university establishments. Low-level radioactive wastes include contaminated laboratory debris, biological materials, building materials and uranium mine tailings. High-level radioactive wastes include spent fuel from nuclear power reactors and liquid and solid residues from reprocessing of spent nuclear fuels. The disposal of radioactive wastes is generally through storage on land, although it has been estimated that, between 1949 and 1982, at least 46 PBq of radioactive wastes were disposed of at sea.³⁷³ Radioactive wastes have been defined by the IAEA Code and by EU law.³⁷⁴

Prevention and Treatment

Although reducing waste generation at source is an important goal of modern waste management strategies, few binding international obligations establish targets and timetables, quantitative restrictions or other limits on the generation of municipal and industrial waste, including hazardous and radioactive wastes. In so far as certain polluting gases, such as sulphur dioxide, nitrogen oxide, volatile organic compounds and carbon dioxide, are waste products, treaties establishing quantitative limits on atmospheric emissions of such gases in effect limit the generation of certain wastes.³⁷⁵ These treaties, however, are exceptional, and (apart from the climate change regime) are characterised by the few industrial countries, in regional terms, which are bound by their substantive provisions. At the regional level, the EU has adopted legislation establishing quantitative targets for the generation of certain categories of waste.³⁷⁶

Acts of international organisations and international agreements have set forth general commitments to limit and prevent waste generation. Invariably, they do not provide specific details as to how this is to be achieved. Resolutions of the Consultative Meetings of the 1972 London Convention have recognised that parties should give priority to no-waste and low-waste technologies.³⁷⁷ The EU Treaty requires EU environmental action to be based upon objectives and principles which ensure a 'prudent and rational utilisation of natural resources' based on 'preventive action'.³⁷⁸ The 1989 Basel Convention requires parties to take measures to '[e]nsure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects', and to prevent, or minimise the consequences of, pollution due to management of hazardous and other wastes.³⁷⁹ The 1989 Basel Convention also requires parties to ensure the availability of 'adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it [the state], whatever the place of their

infectious, toxic for reproduction, mutagenic, sensitising or ecotoxic, as well as substances and preparations which release toxic or very toxic gases or are capable of yielding a leachate.

³⁷³ UNEP, *Environmental Data Report* (1991, 3rd edn), 338 and table 8.11. ³⁷⁴ See p. 613.

³⁷⁵ See generally Chapters 7 and 8.

³⁷⁶ See Directive 2008/98/EC on waste, OJ L 312, 22.11.2008, p. 3–30, Art. 12(2), setting 2020 targets for member states to recycle at least 50 per cent of household wastes and 70 per cent of non-hazardous construction and demolition wastes.

³⁷⁷ Res. LDC.39(13) on the status of incineration of noxious liquid wastes at sea, Preamble; and Res. LDC.51(16) banning ocean dumping of radioactive waste.

³⁷⁸ Art. 191(1) and (2) (formerly Art. 174(1) and (2) of the EC Treaty). ³⁷⁹ Art. 4(2)(a) and (c).

disposal'.³⁸⁰ Cooperation is needed to develop new environmentally sound low-waste technologies and improve existing technologies to eliminate, as far as practicable, the generation of wastes and ensure their environmentally sound management.³⁸¹ The 1999 Conference of the Parties to the Basel Convention determined a number of priority goals for future action, including 'the prevention, minimisation, recycling, recovery and disposal of hazardous wastes . . . taking into account social, technological and economic concerns', and 'the active promotion and use of clean technologies'.³⁸² The Declaration was followed by successive Strategic Frameworks for the Implementation of the Basel Convention. The current Framework that covers the period 2012–21 calls for pursuit of 'the prevention and minimization of hazardous waste and other waste generation at source, especially through supporting and promoting activities designed to reduce at the national level the generation and hazard potential of hazardous and other wastes'.³⁸³

The 1991 Bamako Convention is marginally more ambitious in limiting and preventing hazardous waste generation in Africa. Each party must ensure that hazardous waste generators submit reports to allow the secretariat to produce a hazardous waste audit, and that the hazardous waste generation is 'reduced to a minimum taking into account social, technological and economic aspects'.³⁸⁴ The parties must also impose strict and unlimited liability on generators, and ensure that persons involved in hazardous waste management take necessary steps to prevent pollution from such waste and minimise the consequence of any such pollution.³⁸⁵ Each party must implement the 'preventive, precautionary approach' and promote 'clean production' methods applicable to the entire product life cycle, including raw material, production, transportation, usage and the 'reintroduction of the product into industrial systems or nature when it no longer serves a useful function'.³⁸⁶ 'Clean production' excludes 'end-of-pipe' pollution controls such as filters or scrubbers or chemical, physical or biological treatment, or measures which reduce the volume of waste by incineration or concentration, mask the hazard by dilution, or transfer pollutants from one medium to another.³⁸⁷

Apart from EU developments and conventions discussed above that seek to eliminate production and consumption of certain hazardous chemicals and substances (e.g. POPs and mercury), international commitments establishing binding rules of general application remain limited. In order to become effective, these introductory measures on the prevention and management of waste will have to be supplemented, over time, by clear targets and timetables establishing quantitative limits for waste generation. The basis upon which such targets and timetables are established will raise similar issues to those addressed in other regional and global negotiations, including in particular those relating to ozone depletion and climate change.

³⁸⁰ Art. 4(2)(b). 'Environmentally sound management' means 'taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes' (Art. 2(8)).

³⁸¹ Art. 10(2)(c).

³⁸² Decision V/33 on Environmentally Sound Management, Report of the Fifth Meeting of the Conference of the Parties to the Basel Convention, UNEP/CHW.5/29, 10 December 1999.

³⁸³ Decision BC-10/2: Strategic framework for the implementation of the Basel Convention for 2012–2021, UNEP/CHW.10/BC-10/2, Goal 2, Objective 2.2.

³⁸⁴ Art. 4(3)(a) and (c). A 'generator' is 'any person whose activity produces hazardous wastes, or, if that person is not known, the person who is in possession and/or control of those wastes' (Art. 1(20)).

³⁸⁵ Art. 4(3)(b) and (e).

³⁸⁶ Art. 4(3)(f) and (g). 'Clean production methods' means 'production or industrial systems which avoid or eliminate the generation of hazardous wastes and hazardous products' (Art. 1(5)).

³⁸⁷ *Ibid.*

Disposal

International environmental law is more developed in limiting or prohibiting certain methods of disposal of particular waste types, although no single instrument comprehensively and globally regulates waste disposal. Treaties regulate the disposal of waste into the sea, rivers and lakes, by incineration, and into the atmosphere as a by-product of other activities. In 1988, the General Assembly called on all states 'to ensure that no nuclear-waste dumping practices occur that would infringe upon the sovereignty of states'.³⁸⁸ Other treaties promote safe disposal of asbestos;³⁸⁹ 'appropriate' disposal of wastes during the demolition of buildings or structures;³⁹⁰ and appropriate disposal of chemicals.³⁹¹ Even the use of certain wastes as packing materials is to be avoided.³⁹² With the exception of the EU rules, international regulation of landfill is non-existent.

Disposal at Sea³⁹³

The disposal at sea of different wastes is an increasingly limited option in most regions. Extensive state practice, as reflected in treaties and acts of international organisations, supports the view that the unregulated disposal at sea of any wastes would now violate rules of customary international law, and that the unauthorised disposal at sea of certain hazardous wastes would also violate customary law.³⁹⁴ As described in the previous chapter, the disposal of hazardous wastes at sea is subject to regulation by eight regional or global instruments; and specific prohibitions on the disposal of radioactive, hazardous, industrial, sewage sludge and other wastes have been adopted under several of those treaties.

The disposal of radioactive waste at sea has long been discouraged,³⁹⁵ and has been addressed by international organisations for many years.³⁹⁶ It is prohibited by treaty in the South Pacific³⁹⁷ and in Africa,³⁹⁸ and states have prohibited the dumping of radioactive wastes at sea in the Northeast Atlantic.³⁹⁹ The 1972 London Convention prohibits the dumping of all radioactive wastes or matter at sea, following a 1985 non-binding moratorium. The prohibition is also reflected in the 1996 London Protocol.⁴⁰⁰

Additionally, the disposal of industrial waste at sea has been prohibited in the North Sea since 31 December 1989,⁴⁰¹ and the other waters of the OSPAR Convention area after 31 December

³⁸⁸ UNGA Res. 43/75 (1988). ³⁸⁹ 1986 Asbestos Convention, Art. 19.

³⁹⁰ 1988 Convention Concerning Safety and Health in Construction, Art. 24.

³⁹¹ 1990 ILO Chemicals Convention, Art. 14. ³⁹² 1959 Plant Protection Agreement, Art. VI.

³⁹³ See generally Chapter 11, pp. 479–86.

³⁹⁴ See e.g. UNEP Council Decision, Precautionary Approach to Marine Pollution, Including Waste Dumping at Sea, 25 May 1989, UNEP/GC/Dec./15/27.

³⁹⁵ 1958 Convention on the High Seas, Art. 25(1).

³⁹⁶ See e.g. UNGA Res., Prohibition of Dumping of Radioactive Wastes for Hostile Purposes, 7 December 1988, A/RES./43/75Q; UNGA Res., Dumping of Radioactive Wastes, 7 December 1988, A/RES./43/75T, 10 December 1996, A/RES./51/45J, 4 December 1998, A/RES./53/77C, 1 December 1999, A/RES./54/54C.

³⁹⁷ 1985 Rarotonga Treaty, Art. 7; 1986 Noumea Convention, Art. 10(1).

³⁹⁸ 1991 Bamako Convention, Art. 4(2), which also prohibits disposal in the seabed and sub-seabed. See also OAU Council of Ministers Resolution, Dumping of Nuclear and Industrial Waste in Africa, 23 May 1988, 28 ILM 567 (1989).

³⁹⁹ Chapter 11, pp. 479–86. ⁴⁰⁰ Chapter 11, pp. 480–3; 1996 London Protocol, Annex 1, para. 3 and Art. 26(2).

⁴⁰¹ Ministerial Declaration of the Second International Conference on the Protection of the North Sea, 25 November 1987, para. 22(a); OSCOM Decision 89/1, June 1989. The UK agreed to end such dumping by the end of 1992 with an extension to 1993 'only if absolutely necessary on technical grounds and excluding new dumping licences' (Third North Sea Ministerial Declaration, para. 18 (1990)).

1995,⁴⁰² and in Africa.⁴⁰³ Since December 1998, the disposal of sewage sludge has been prohibited in the North Sea⁴⁰⁴ and in the OSPAR Convention area.⁴⁰⁵ The disposal of dredged materials at sea, which account for 80–90 per cent of all material dumped at sea, has also been a matter of international concern and the subject of international regulatory action.⁴⁰⁶ Under the 1996 Protocol to the 1972 London Convention, all dumping is prohibited, except for wastes on the ‘reverse list’ that are potentially acceptable for dumping.⁴⁰⁷ Moreover, the disposal at sea of oily wastes from ships is also prohibited by numerous treaties. Other wastes of emerging concern, for which international regulation is less well developed, include mine tailings, marine litter and the potential for waste generation from deep seabed mining activities.⁴⁰⁸

Disposal into Rivers and Lakes by Other Land-Based Sources

The disposal of wastes into rivers and lakes is prohibited or regulated by many bilateral and multilateral treaties. Such prohibition and regulation is either intended to protect the environmental quality of freshwater resources or to protect the quality of seas and oceans by limiting the transportation of waste pollutants by rivers and estuaries into the seas and oceans and other land-based sources of pollution.⁴⁰⁹ The Convention on the Protection and Use of Transboundary Watercourses and International Lakes requires states parties to ‘take all appropriate measures to prevent, control and reduce pollution of waters causing or likely to cause transboundary impact’.⁴¹⁰ The Convention requires parties to implement measures to ensure the reduction, control and in some cases prohibition of pollutant emissions into transboundary rivers and international lakes; and establishes monitoring, research and development, information exchange, joint monitoring and assessment programmes as well as bilateral and multilateral cooperation schemes.⁴¹¹ The EU has also adopted specific legislation on the treatment and disposal of urban wastewater and municipal waste.⁴¹²

Incineration

The incineration of wastes is limited by treaty and acts of international institutions in several regions and, in the case of the EU, subject to conformity with stringent technical standards. Incineration of marine waste at sea has been banned in the North Sea since 31 December 1991,⁴¹³ and in the former 1974 Oslo Convention area by the same date.⁴¹⁴ The 1992 OSPAR

⁴⁰² OSCOM Decision 89/1 on the Reduction and Cessation of Dumping Industrial Wastes at Sea (1989). The Decision created exceptions for inert materials of natural origin and industrial wastes for which it can be shown that there are no practical alternatives on land, and that the materials cause no harm in the marine environment (para. 1).

⁴⁰³ OAU Council of Ministers Resolution, Dumping of Nuclear and Industrial Waste in Africa, 23 May 1988, 28 ILM 567 (1989).

⁴⁰⁴ Third North Sea Ministerial Declaration, paras. 14 and 15 (1990). See also Brussels Agreement on the Implementation of a European Project on Pollution, on the Topic ‘Sewage Sludge Processing’, 23 November 1971, 12 ILM 9 (1973).

⁴⁰⁵ OSPAR Convention, Art. 3(2)(c).

⁴⁰⁶ See also Third North Sea Ministerial Declaration, paras. 19–22 (1990); see also the Dredged Material Assessment Framework adopted in 1995 under the London Convention (Res. LC52.18) and the 1998 OSPAR Guidelines for the Management of Dredged Material (Agreement 1998–20).

⁴⁰⁷ See Chapter 11, pp. 480–3.

⁴⁰⁸ See generally www.imo.org/en/OurWork/Environment/LCLP/newandemergingissues/Pages/default.aspx

⁴⁰⁹ Chapter 9, pp. 363–6. ⁴¹⁰ Art. 2(2)(a). ⁴¹¹ Art. 3(1)(a) and (d).

⁴¹² Council Directive 91/271/EEC (21 May 1991), as amended; see also UNEP/WHO/UN-HABITAT/WSSCC, *Guidelines on Municipal Wastewater Management* (2004).

⁴¹³ See Third North Sea Ministerial Declaration, para. 23 (1990).

⁴¹⁴ See Chapter 11, pp. 479ff.; OSCOM Decision 90/2 on the Termination of Incineration at Sea, 23 June 1990, para. 1. The Decision repealed Decision 88/1 on the Termination of Incineration at Sea by 31 December 1994.

Convention prohibits incineration at sea.⁴¹⁵ In November 1990, parties to the 1972 London Convention agreed to 're-evaluate incineration at sea of noxious liquid wastes as early in 1992 as possible with a view to proceeding towards the termination of this practice by 31 December 1994'.⁴¹⁶ The re-evaluation was to take into account the practical availability of safer and environmentally more acceptable land-based alternatives, and in the meantime parties were not to export such wastes intended for incineration at sea or allow their disposal in other ways harmful to the environment.⁴¹⁷ In fact, the incineration at sea of such wastes ceased at the end of 1990 with the decommissioning of the last incineration vessel. The de facto situation was formally confirmed by amendments to the 1972 London Convention in February 1994 prohibiting the incineration of industrial wastes and sewage sludge at sea, and requiring special permits for the incineration of other types of waste.⁴¹⁸ The 1996 Protocol to the 1972 London Convention prohibits the incineration of wastes at sea.⁴¹⁹ The 1991 Bamako Convention similarly prohibits the incineration of hazardous waste at sea.⁴²⁰

Land-based incineration of waste is currently dealt with only by EU legislation,⁴²¹ although it is considered to be a sufficiently hazardous activity to warrant mandatory environmental impact assessment under the relevant regional arrangements.⁴²² The 1991 Antarctic Environment Protocol has banned the open burning of wastes since the end of the 1998/9 season, and allows the burning of certain non-hazardous combustible wastes only in incinerators which 'to the maximum extent practicable reduce harmful emissions'.⁴²³ The EU's legislation on the limitation of air pollution from new and existing waste incineration plants provides one model that could be followed by other regions.

The incineration of fossil fuels, with its by-product of waste gases, has been the subject of a number of treaties and acts of international institutions. Emissions of waste gases of sulphur dioxide,⁴²⁴ nitrogen oxide,⁴²⁵ volatile organic compounds,⁴²⁶ and carbon dioxide and other greenhouse gases,⁴²⁷ are regulated. Limits have also been placed on the generation of waste gases by combustion from motor vehicles, aircraft⁴²⁸ and shipping.⁴²⁹

Landfill and Other Land Disposal and Storage

There is no international regulation of standards for domestic landfill, other than the European Council Directive 99/31/EC establishing minimum standards for the design and management of landfill waste.⁴³⁰ European Council Decision 2003/33/EC sets out a uniform landfill waste

⁴¹⁵ Annex II of the OSPAR Convention on the Prevention of Pollution by Dumping or Incineration. Chapter 11, p. 484.

⁴¹⁶ Res. LDC.39(13), Status of Incineration of Noxious Liquid Wastes at Sea, para. 1. See also Res. LDC.35(11) on the Status of Incineration of Noxious Liquid Wastes at Sea, and Res. LDC.33(11) on Revised Interim Technical Guidelines on Incineration of Wastes and Other Matter at Sea. See also 1972 London Convention, Amendments to Annexes to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter Concerning Incineration at Sea, 12 October 1978, in force 11 March 1979.

⁴¹⁷ Para. 2. ⁴¹⁸ Annex I, para. 10.

⁴¹⁹ Art. 5 of the 1996 Protocol established a blanket ban on 'incineration at sea of wastes and other matter'. 'Incineration at sea' encompasses combustion of waste on a vessel or other human-made structure at sea, but does not include wastes 'generated during the normal operation of that vessel . . . or other man-made structure' (Art. 1(5)(1) and (2)).

⁴²⁰ Art. 4(2). ⁴²¹ Directive 2000/76/EC and Regulation (EC) No. 1137/2008 on the incineration of waste.

⁴²² 1991 Espoo Convention, Appendix 1, para. 10. ⁴²³ Annex III, Art. 3. ⁴²⁴ Chapter 7, p. 263.

⁴²⁵ Chapter 7, pp. 263-4. ⁴²⁶ Chapter 8, pp. 333-4. ⁴²⁷ See generally Chapter 8. ⁴²⁸ Chapter 7, pp. 275-6.

⁴²⁹ *Ibid.*, pp. 265-7. ⁴³⁰ Council Directive 99/31/EC on the landfill of waste, OJ L182, 16 July 1999, 1.

classification and acceptance procedures.⁴³¹ The 1991 Espoo Convention requires landfill of toxic and dangerous wastes likely to cause a significant adverse transboundary impact to be subjected to environmental impact assessment and notified to potentially affected parties to ensure adequate and effective consultation.⁴³² The Antarctic area is subject to more detailed rules. Here, the disposal of radioactive waste has been prohibited since 1959.⁴³³ The 1991 Environmental Protection Protocol prohibits disposal of wastes onto ice-free areas and establishes rules for the disposal of sewage, domestic and other liquid wastes and wastes generated at field camps, which should generally be removed by the generator.⁴³⁴ Wastes to be removed from the Antarctic Treaty area should also be stored to prevent their dispersal into the atmosphere.⁴³⁵

Elsewhere, the 1986 Noumea Convention is one of the few treaties to establish detailed rules on storage, requiring the storage of toxic and hazardous wastes to be subject to measures to prevent pollution, and prohibiting storage of radioactive wastes or matter.⁴³⁶ The 2001 POPs Convention requires states parties to take appropriate measures to dispose of wastes consisting of, containing or contaminated with POPs in such a way that the POP content is destroyed or irreversibly transformed.⁴³⁷ Where destruction or irreversible transformation does not represent the environmentally preferable option or the persistent organic pollutant content is low, states parties must ensure that the wastes are disposed of in an environmentally sound manner, taking into account international rules, standards, guidelines and relevant global and regional regimes governing the management of hazardous wastes.⁴³⁸ States parties are to ensure that POPs wastes are not permitted to be subjected to disposal operations that may lead to recovery, recycling, reclamation, direct reuse or alternative uses of POPs.⁴³⁹ Similar provisions apply to mercury wastes under the 2013 Minamata Mercury Convention.⁴⁴⁰

Recycling and Reuse

Political efforts to encourage recycling, recovery and reuse of materials and products have not yet led to well-developed international legal commitments. Early attempts included OECD recommendations on reuse and recycling of beverage containers and on recovery of waste paper.⁴⁴¹ The 1987 Montreal Protocol calls for research and development and the exchange of information on the best technologies for improving the recovery and recycling of certain controlled and transitional ozone-depleting substances,⁴⁴² but does not establish targets for

⁴³¹ Council Decision 2003/33/EC, OJ L11, 16 January 2003, 27.

⁴³² Chapter 14, pp. 667–70; Arts. 2(2), 3(1) and 5, and Appendix I, para. 10. ⁴³³ Antarctic Treaty 1959, Art. V(1).

⁴³⁴ Annex III, Art. 4. ⁴³⁵ Annex III, Art. 6. ⁴³⁶ Art. 11. ⁴³⁷ Art. 6(d)(iii).

⁴³⁸ *Ibid.*, The Conference of the Parties to the 2001 POPs Convention is required to cooperate closely with the appropriate bodies of the 1989 Basel Convention to: (a) establish levels of destruction and irreversible transformation necessary to remove the hazardous characteristics of POPs; (b) determine what they consider to be methods that constitute environmentally sound disposal; and (c) work to establish, as appropriate, the concentration levels of the chemicals which can be defined as 'low persistent organic pollutant content' (Art. 6(2)).

⁴³⁹ Art. 6(d)(iii). ⁴⁴⁰ Art. 13(3).

⁴⁴¹ OECD Council Recommendation, Re-use and Recycling of Beverage Containers, OECD C(78)8 Final, 3 February 1978; OECD Council Recommendation, Waste Paper Recovery, OECD C(79)218 Final, 30 January 1980. See also Decision of the Council Concerning the Control of Transfrontier Movements of Wastes Destined for Recovery Operations, OECD C(92)39 Final, 6 April 1992.

⁴⁴² Art. 9(1)(a), as amended by the 1990 amendments.

recovery or recycling.⁴⁴³ The 1989 Basel Convention may provide a basis for future international legislation by identifying disposal operations that may lead to recovery, recycling and reuse.⁴⁴⁴ The Convention itself does not, however, identify recycling, reuse and recovery as a matter for international cooperation or call for any specific international action or measures.⁴⁴⁵ EU law requires member states to encourage the recovery of wastes, including hazardous and toxic wastes, by means of recycling, reuse or reclamation or other processes to extract secondary raw materials and to use waste as a source of energy.⁴⁴⁶

International Movement (Including Trade) in Waste

International law on waste has focused primarily on the permissibility of international movement and trade in waste. This follows several notorious incidents that occurred in the mid 1980s involving the unlawful dumping in developing countries of hazardous wastes produced in industrialised countries.⁴⁴⁷ Among the tensions between different members of the international community, one in particular stood out: the desire of many developing countries, particularly in Africa, to ban the international trade in wastes, and the opposition to such an approach by many industrialised countries wanting to keep their waste disposal options open. As a result, various international legal arrangements were adopted in a two-year period, each of which established different rules and definitions. Prior to the adoption of these agreements, the issue had been addressed by binding and non-binding acts of various international organisations, including the EU, the OECD⁴⁴⁸ and the UN.⁴⁴⁹ International trade in waste has also been addressed by UN bodies as a human rights issue.⁴⁵⁰ Transboundary movements of hazardous and other wastes are

⁴⁴³ As amended in 1990, the Montreal Protocol encourages recycling of certain ozone-depleting substances by excluding recycled substances from the definition of 'production' (see Chapter 7, p. 282).

⁴⁴⁴ Annex IV(B). These operations include use as a fuel (other than in direct incineration) to generate energy, reclamation or regeneration of solvents and non-solvents, recycling or reclamation of metals and metal compounds and other inorganic materials, regeneration of acids, recovery of pollution abatement and catalyst components, refining of used oil, land treatment, and uses of residue materials. The Bamako Convention identifies the same list but does not distinguish these operations from other disposal operations (Annex III).

⁴⁴⁵ Art. 10(2). See also the 1991 Bamako Convention, Art. 10.

⁴⁴⁶ Council Directive 2006/12/EC and Council Directive 2008/98/EC

⁴⁴⁷ *The International Trade in Wastes: A Greenpeace Inventory* (1988, 3rd edn); *Illegal Traffic in Toxic and Dangerous Products and Wastes: Report of the Secretary General to the UN General Assembly*, UN Doc. A/44/362 (1989); *Traffic in and Disposal, Control and Transboundary Movements of Toxic and Dangerous Products and Wastes: Report of the Secretary General to the UN General Assembly*, UN Doc. A/46/214 (1991); *Report of the Special Rapporteur on the Adverse Effects of the Movement and Dumping of Toxic and Dangerous Products and Wastes on the Enjoyment of Human Rights*, UN Doc. A/HRC/15/22/Add.3 (2010).

⁴⁴⁸ See e.g. OECD Council Decision/Recommendation, *Transfrontier Movements of Hazardous Waste*, OECD C(83)180 Final, 1 February 1984; OECD Council Resolution, *International Co-operation Concerning Transfrontier Movements of Hazardous Wastes*, OECD C(85)100, 20 June 1985; OECD Council Decision/Recommendation, *Exports of Hazardous Wastes from the OECD Area*, OECD C(86)64 Final, 5 June 1986; OECD Council Decision, *Transfrontier Movements of Hazardous Wastes* OECD C(88)90 Final, 27 May 1988; OECD Council Decision, *the Control of Transfrontier Movements of Wastes Destined for Recovery Operation*, OECD C(92)39 Final, 30 March 1992; OECD Council Decision, *Document for Transfrontier Movements of Waste*, OECD C(94)154 Final, 28 July 1994; OECD Council Decision on the *Control of Transboundary Movements of Wastes Destined for Recovery Operations*, OECD C(2001)107 Final, 14 June 2001; OECD Council Recommendation on the *Environmentally Sound Management of Waste*, OECD C(2004)100, 9 June 2004.

⁴⁴⁹ UNGA Res. 42/183 (1987); UNGA Res. 44/226 (1989); UNGA Res. S-19/2 (1997), 'Programme for Further Implementation of Agenda 21', paras. 58–63; UNGA Res. 62/34 (2008), 'Prohibition on the Dumping of Radioactive Wastes'; UNGA Res. 64/45 (2010), 'Prohibition on the Dumping of Radioactive Wastes'; Plan of Implementation of the World Summit on Sustainable Development, paras. 23 and 68, in Report of the World Summit on Sustainable

now regulated by several regional or global treaties, each of which establishes different rules, including the 1989 Basel Convention, the 1991 Bamako Convention and the 1995 Waigani Convention.⁴⁵¹ Other instruments include the 2001 POPs Convention and the 2013 Minamata Mercury Convention, bilateral treaties such as the 1986 Canada–United States Hazardous Waste Agreement and the 1986 Canada–Mexico Hazardous Waste Agreement, as well as OECD acts and the increasingly complex EU rules established by legislation and by the jurisprudence of the European Court of Justice.

The 1989 Basel Convention⁴⁵²

The 1989 Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989 Basel Convention) is intended to establish a global regime for the control of international trade in hazardous and other wastes.⁴⁵³ It was negotiated under the auspices of UNEP on the basis of texts produced by a working group that had drawn on the Cairo Guidelines. The Convention establishes rules designed to regulate trade in these wastes rather than prohibit it. The Convention sets forth general obligations requiring all parties to ensure that transboundary movements of wastes are reduced to the minimum consistent with environmentally sound and efficient management, and it reflects an approach premised upon the view that wastes should, as far as possible, be disposed of in the state in which they were generated (known as the ‘proximity principle’). The Convention has attracted broad support, and there is a consensus among commentators that, although ‘far from providing a perfect solution to the problem of trans-boundary movements of hazardous wastes, it does address most of the relevant issues and is therefore a step in the right direction’.⁴⁵⁴

Article 4 sets forth general obligations designed to minimise waste generation and its trans-boundary movement, and ensure its environmentally sound management. The parties must not allow exports to parties which have prohibited by legislation all imports, or where they have reason to believe that the wastes will not be managed in an environmentally sound manner, and are obliged to cooperate to improve and achieve environmentally sound management of such

Development, Johannesburg, South Africa, 26 August–4 September 2002, UN Doc. A/Conf.199/20, Resolution 2 and Annex.

⁴⁵⁰ See Commission on Human Rights Res. E/CN.4/RES/1999/23 on the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, Chapter 17, p. 815.

⁴⁵¹ Several other regional agreements have been adopted: the 1996 Izmir Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal, Izmir, 1 October 1996, not yet in force, www.unep.ch/regionalseas/main/med/medhaz.html; and the 1998 Protocol on the Control of Marine Transboundary Movements and Disposal of Hazardous Wastes and Other Wastes to the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, Kuwait, 17 March 1998, in force 26 November 2001.

⁴⁵² D. P. Hackett, ‘An Assessment of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal’, 5 *American University Journal of International Law and Policy* 295 (1990); C. Shearer, ‘Comparative Analysis of the Basel and Bamako Conventions on Hazardous Waste’, 23 *Environmental Law* 141 (1993); K. Kummer, *International Management of Hazardous Wastes: The Basel Convention and Related Legal Rules* (Oxford: Clarendon Press, 2000); A. Sanders and P. Bowal, ‘International Trade in Hazardous Wastes and the Basel Convention’, 11 *Journal of Environmental Law and Practice* 143 (2001); C. Okereke, *Global Justice and Neoliberal Environmental Governance: Ethics, Sustainable Development and International Co-operation* (Abingdon, UK: Routledge, 2007), ch. 5.

⁴⁵³ Basel, 22 March 1989, in force 24 May 1989, 28 ILM 657 (1989); 183 states and the EU are party. On the definition of hazardous and other wastes under the Basel Convention, see pp. 620–3.

⁴⁵⁴ K. Kummer, ‘The International Regulation of Transboundary Traffic in Hazardous Wastes: The 1989 Basel Convention’, 41 *International and Comparative Law Quarterly* 530 at 560 (1992).

wastes.⁴⁵⁵ Parties may prohibit the import of such wastes and must consent in writing to any specific imports that they have not prohibited.⁴⁵⁶ Parties must provide information on proposed transboundary movements of hazardous and other wastes to the states concerned, and prevent imports if they have reason to believe that the imports will not be managed in an environmentally sound manner.⁴⁵⁷ Wastes may not be exported to or imported from a non-party, and they cannot be exported for disposal to the Antarctic area.⁴⁵⁸ Traffic that contravenes notification or consent requirements, or fails to conform with its documentation, or results in deliberate disposal in contravention of the Convention and general principles of international law, is illegal and considered to be criminal.⁴⁵⁹

The Convention discourages exports of hazardous and other wastes, which should only be allowed if the exporting state does not have the capacity, facilities or suitable sites to dispose of them in an environmentally sound or efficient manner, or if the wastes are required as a raw material for recycling or recovery in the importing state, or in accordance with other criteria decided by the parties.⁴⁶⁰ Moreover, parties may not transfer to importing or transit states their obligation under the Convention to carry out environmentally sound management, and can impose additional requirements consistent with the Convention to better protect human health and the environment.⁴⁶¹ The transport and disposal of hazardous and other wastes may only be carried out by authorised persons, and transboundary movements must conform with generally accepted and recognised international rules and standards of packaging, labelling and transport, and take account of relevant internationally recognised practices, and be accompanied by a movement document until disposal.⁴⁶²

The Convention sets forth detailed conditions for the international regulation of transboundary movements of hazardous and other wastes between parties based upon a system of 'prior informed consent'. The exporting state, generator or exporter must notify the states concerned of any proposed transboundary movement, including the information specified in Annex V(A).⁴⁶³ The importing state responds by giving its consent with or without conditions, denying permission, or requiring additional information, and no transboundary movement may commence until the exporting state has received the written consent of the importing state and confirmation from that state of the existence of a contract between the exporter and the disposer specifying environmentally sound management of the wastes.⁴⁶⁴ Transit states can prohibit transit passage, and the exporting state must not allow transboundary movement to commence until it has the written consent of the transit state.⁴⁶⁵ The Convention allows for general notifications and consents to cover a twelve-month period where wastes having the same characteristics are shipped regularly to the same disposer via the same exit office of the exporting state, entry office of the importing state and customs office of the transit state.⁴⁶⁶ Importing states and

⁴⁵⁵ Arts. 4(1)(b), (2)(e) and (h) and 10. As required by Art. 4(8), criteria for environmentally sound management were decided by the first Conference of the Parties in Decision I/9. The subsidiary body of the Basel Convention has also adopted Technical Guidelines on various aspects of environmentally sound management of different waste streams (see www.basel.int/Implementation/TechnicalMatters/DevelopmentofTechnicalGuidelines/AdoptedTechnicalGuidelines/tabid/2376/lapg-15589/1/Default.aspx).

⁴⁵⁶ Art. 4(1)(a) and (c). ⁴⁵⁷ Art. 4(2)(f) and (g). ⁴⁵⁸ Art. 4(5) and (6). ⁴⁵⁹ Arts. 4(3) and 9. ⁴⁶⁰ Art. 4(9).

⁴⁶¹ Art. 4(10) and (11). ⁴⁶² Art. 4(7).

⁴⁶³ Art. 6(1). 'States concerned' are 'parties which are states of export or import, or transit states whether or not parties' (Art. 2(13)). Art. 6(1) also applies to transboundary movements from a party through a state or states which are not parties (Art. 7).

⁴⁶⁴ Art. 6(2) and (3). ⁴⁶⁵ Art. 6(4). ⁴⁶⁶ Art. 6(6)–(8).

transit states that are parties may require the wastes to be covered by insurance or other guarantee.⁴⁶⁷ When a transboundary movement cannot be completed in accordance with the terms of the contract, the exporting state must take back the wastes if alternative arrangements cannot be made for their disposal in an environmentally sound manner.⁴⁶⁸

Parties can enter into bilateral, multilateral or regional agreements or arrangements regarding transboundary movements of wastes provided that they do not derogate from the environmentally sound management of hazardous wastes and other wastes required by the Convention.⁴⁶⁹ The Convention does not affect transboundary movements taking place entirely among the parties to such agreements, which must be notified to the secretariat, provided that they are compatible with the requirements of the Convention.⁴⁷⁰ The parties are subject to detailed reporting requirements, and the Convention provides for consultations on liability to be held as soon as possible.⁴⁷¹

The Convention is kept under review by a Conference of the Parties and a secretariat.⁴⁷² At the fifth Conference of the Parties, held in December 1999, the parties adopted a Protocol on Liability and Compensation, but this has not yet entered into force.⁴⁷³ Compared to many other environmental agreements, the Convention sets out relatively detailed tasks for the secretariat, including gathering and sharing information, and examination of notifications and other aspects of transboundary movements.⁴⁷⁴

The second Conference of the Parties, held in March 1994, approved an immediate ban on the export from OECD countries to non-OECD countries of hazardous wastes intended for final disposal and also agreed to ban the export of wastes intended for recovery and recycling by 31 December 1997.⁴⁷⁵ The 'Basel Ban', as it became known, was not formally incorporated into the Convention by the second Conference of the Parties, and disputes arose as to whether it was legally binding on the parties. To resolve this dispute, it was proposed at the third Conference of the Parties, in September 1995, that the Basel Ban be formally incorporated into the Basel Convention as an amendment.⁴⁷⁶ The Basel Ban Amendment adopted by the third Conference of the Parties does not refer to OECD and non-OECD countries, but rather bans hazardous waste exports for final disposal and recycling from Annex VII parties (members of the EU, OECD and Liechtenstein) to non-Annex VII parties.⁴⁷⁷ The ambiguous wording of Article 17(5) of the Basel Convention led to three opposing views on the number of ratifications required in order for the Ban Amendment to come into force. The depositary took the view that Article 17(5) requires

⁴⁶⁷ Art. 6(11). ⁴⁶⁸ Art. 8.

⁴⁶⁹ Art. 11(1). Three such regional agreements or arrangements may fall within this provision: the 1991 Bamako Convention, the 1995 Waigani Convention and the 1993 EU Regulation. See generally J. Crawford and P. Sands, *The Availability of Article 11 Agreements in the Context of the Basel Convention's Export Ban on Recyclables* (International Council on Metals and the Environment, 1997).

⁴⁷⁰ Art. 11(2). ⁴⁷¹ Arts. 12 and 13; on liability, see Chapter 16, pp. 790–1.

⁴⁷² Arts. 15 and 16. As of June 2016, twelve meetings of the Conference of the Parties had been held.

⁴⁷³ Chapter 16, pp. 790–1. ⁴⁷⁴ Art. 16. ⁴⁷⁵ Decision II/12, Report of COP-2, UNEP/CHW.2/30, 25 March 1994.

⁴⁷⁶ Decision III/1, Report of COP-3, Part 2, UNEP/CHW.3/34, 17 October 1995; L. de la Fayette, 'Legal and Practical Implications of the Ban Amendment to the Basel Convention', 6 *Yearbook of International Environmental Law* 703 (1995); Crawford and Sands, *The Availability of Article 11 Agreements in the Context of the Basel Convention's Export Ban on Recyclables*.

⁴⁷⁷ Art. 4A and Annex VII, Basel Ban Amendment. The Amendment will also insert a new preambular para. 7bis into the Convention in the following terms: 'Recognizing that transboundary movements of hazardous wastes, especially to developing countries, have a high risk of not constituting an environmentally sound management of hazardous wastes as required by this Convention.'

two-thirds of current members to ratify the Amendment; some non-governmental organisations espoused the view that the Amendment requires two-thirds of the total number of states parties at the time of the Amendment's adoption in 1995 (87 states); others argued that the Amendment requires two-thirds of those states parties present and voting in 1995.⁴⁷⁸ At the tenth meeting of the Conference of the Parties, parties agreed, without prejudice to any other multilateral environmental agreement, that the meaning of Article 17(5) of the Basel Convention should be interpreted to mean that 'acceptance of three-fourths of those parties that were parties at the time of the adoption of the amendment is required for the entry into force of such amendment, noting that such an interpretation of paragraph 5 of Article 17 does not compel any party to ratify the Ban Amendment.'⁴⁷⁹ The Basel Ban has still not entered into force as less than three-quarters of those parties that were parties to the Convention at the time of adoption of the ban have so far ratified the Amendment.⁴⁸⁰

1991 Bamako Convention⁴⁸¹

The Convention on the Ban of Imports into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (1991 Bamako Convention) was adopted by African governments following negotiations under the auspices of the African Union (formerly the Organization of African Unity).⁴⁸² It establishes a regional regime to prohibit trade in waste, giving effect to the positions many African governments had adopted in the negotiations on the 1989 Basel Convention.⁴⁸³ To a large extent, the 1991 Bamako Convention follows the approach taken in the 1989 Basel Convention, but departs from it in a number of important respects. First, and most notably, the Bamako Convention prohibits trade in hazardous waste. Parties must prohibit the import of all hazardous wastes into Africa from non-contracting parties and deem such imports illegal and criminal.⁴⁸⁴ A second difference is that parties must ensure that hazardous wastes to be exported are managed in an environmentally sound way in the state of import and transit, and only authorised persons may store such wastes.⁴⁸⁵ Third, the definition of hazardous waste adopted by the Bamako Convention is broader than that in the Basel Convention.⁴⁸⁶ The Bamako Convention includes several other subtle but significant differences. Wastes to be used as raw materials for recycling and recovery may not be exported, and parties must appoint a national body to act as a 'Dumpwatch' to coordinate governmental and non-

⁴⁷⁸ See A. Daniel, 'Transboundary Movements of Hazardous Waste', 18 *Yearbook of International Environmental Law* 258 (2007).

⁴⁷⁹ Decision BC-10/3 (2011).

⁴⁸⁰ See Depository's Letter of 19 March 2013, available at www.basel.int/Implementation/LegalMatters/BanAmendment/QuestionsandAnswers/tabid/3596/Default.aspx

⁴⁸¹ S. W. Donald, 'The Bamako Convention as a Solution to the Problem of Hazardous Waste Exports to Less Developed Countries', 17 *Columbia Journal of Environmental Law* 419 (1992); F. Ouguergouz, 'La Convention de Bamako sur l'Interdiction d'Importer en Afrique des Déchets Dangereux et sur le Contrôle des Mouvements Transfrontières et la Gestion des Déchets Dangereux Produits en Afrique', *Annuaire Français de Droit International* 871 (1992); Kummer, *International Management of Hazardous Wastes*; D. Tladi, 'The Quest to Ban Hazardous Waste Import into Africa: First Bamako and Now Basel', 33 *Comparative and International Law Journal of Southern Africa* 210 (2000).

⁴⁸² Bamako, 29 January 1991, in force April 1998, 30 ILM 775 (1991); twenty-five states are party.

⁴⁸³ See UNEP, *Proposals and Positions of the African States During the Negotiations on the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Status of Their Incorporation into the Basel Convention* (1989).

⁴⁸⁴ Art. 4(1); since only member states of the African Union may become parties to the Convention (Arts. 22 and 23), it effectively prohibits imports from outside Africa.

⁴⁸⁵ Art. 4(3)(i) and (m)(i). ⁴⁸⁶ See pp. 620–3.

governmental bodies.⁴⁸⁷ Moreover, parties may not decide not to require prior written consent; parties must not allow use of general notifications;⁴⁸⁸ the rule requiring notification of the transit state applies to transboundary movements from a party through a state or states which is or are not parties,⁴⁸⁹ and illegal traffic may be returned only to the exporter.⁴⁹⁰ The Bamako Convention is administered by its own Conference of the Parties and secretariat.⁴⁹¹ Significantly, the secretariat of the Bamako Convention is granted greater powers than the secretariat of the Basel Convention since it may verify the substance of allegations of breach of the Convention and submit a report to all parties.⁴⁹² Moreover, it provides for the apparently compulsory jurisdiction of an ad hoc dispute settlement organ, or the ICJ.⁴⁹³

1995 Waigani Convention

The Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region (1995 Waigani Convention) was adopted by governments in the South Pacific region following negotiations under the auspices of the Pacific Island Forum.⁴⁹⁴ The Waigani Convention was modelled after the Bamako Convention, and, like the latter treaty, it bans the import of hazardous and radioactive wastes into its area of coverage and regulates the transboundary movement of such wastes among parties thereto.⁴⁹⁵ In addition, 'other parties', namely Australia and New Zealand, are required to ban the export of hazardous wastes to all Forum Island countries and territories within the Convention area.⁴⁹⁶ Other similarities to the Bamako Convention include the Waigani Convention's prohibition on the dumping of hazardous wastes at sea,⁴⁹⁷ and its requirement that any transboundary movement of hazardous wastes shall be covered by insurance, bond or other guarantees as may be required or agreed to by the importing or transit party.⁴⁹⁸ The Waigani Convention also replicates the provisions of the Bamako Convention regarding the national definition of hazardous wastes,⁴⁹⁹ and the duty to reimport, although in the event of an authorised transboundary movement of hazardous wastes that cannot be completed the exporting party need not reimport those wastes if alternative arrangements are made for the disposal of the wastes in an environmentally sound manner.⁵⁰⁰ The Waigani Convention permits the use of a general notification procedure where 'hazardous wastes having the same physical and chemical characteristics are shipped regularly to the same disposer via the same customs office of exit of the exporting Party, via the same

⁴⁸⁷ Art. 5(4). ⁴⁸⁸ Art. 6(6); cf. Art. 6(6) of the 1989 Basel Convention.

⁴⁸⁹ Art. 7; cf. Art. 7 of the 1989 Basel Convention.

⁴⁹⁰ Art. 9(3) and (4); cf. Art. 9(3) and (4) of the 1989 Basel Convention. ⁴⁹¹ Arts. 15 and 16. ⁴⁹² Art. 19.

⁴⁹³ Art. 20.

⁴⁹⁴ Waigani, 16 September 1995, in force 21 October 2001, 2161 UNTS 93; twelve states are party. See also D. van Hoogstraten and P. Lawrence, 'Protecting the South Pacific from Hazardous and Nuclear Waste Dumping: The Waigani Convention', 7(3) *Review of European Community and International Environmental Law* 268 (1998); S. Murphy, 'South Pacific Regional Environmental Programme's (SREP) Aptitude in Managing Marine Pollution in the South Pacific', 18 *Australian and New Zealand Maritime Law Journal* 107 (2004).

⁴⁹⁵ Art. 4(1).

⁴⁹⁶ Art. 4.1(b). The 'Convention area' is defined in Art. 1 and includes the land territory, internal waters, territorial sea, continental shelf, archipelagic waters and exclusive economic zones of twenty-four countries in the South Pacific region. Forum Island countries are all country members of the South Pacific Forum, with the exception of Australia and New Zealand.

⁴⁹⁷ Art. 4(3). ⁴⁹⁸ Art. 6(10). ⁴⁹⁹ Art. 3. ⁵⁰⁰ Art. 8.

Customs office of entry of the importing Party, and, in the case of transit, via the same customs office of entry and exit of the Party or Parties of transit'.⁵⁰¹

Alongside its prohibition on waste trade, other objectives of the Convention are: to reduce the transboundary movement of hazardous wastes to a minimum consistent with their environmentally sound management; to treat and dispose of hazardous wastes as close as possible to their source of generation in an environmentally sound way; and to minimise the generation of hazardous wastes.⁵⁰² As under the Bamako Convention, wastes covered by the Waigani Convention include certain radioactive wastes,⁵⁰³ but exclude wastes arising from the normal operation of a vessel, the discharge of which is covered by another international instrument.⁵⁰⁴ The Convention is administered by a Conference of the Parties with assistance from a secretariat, which is to cooperate with the Basel Convention secretariat.⁵⁰⁵ An innovative provision of the Convention requires the Conference of the Parties to establish a 'Revolving Fund' for interim use in emergency situations to minimise damage from disasters or accidents involving transboundary movement or disposal of hazardous wastes within the Convention area.⁵⁰⁶

North America

The 1986 Mexico–United States Hazardous Waste Agreement requires the exporting country to notify the importing country of individual shipments or a series of shipments over a twelve-month period, which the importing country must respond to within forty-five days indicating its consent, with or without conditions, or its objection.⁵⁰⁷ The exporting country must readmit any shipment that may be returned for any reason by the country of import.⁵⁰⁸ The Agreement Between the United States and Canada Concerning the Transboundary Movement of Hazardous Waste requires the exporting country to notify the importing country of proposed transboundary shipments of hazardous waste, and states that, if no response is received within thirty days, the country of import will be deemed to have granted its consent.⁵⁰⁹ The United States also has bilateral agreements on the export of hazardous wastes from Costa Rica,⁵¹⁰ Malaysia⁵¹¹ and the Philippines.⁵¹²

1990 IAEA Code of Conduct on Radioactive Waste and 1997 Joint Convention on Spent Fuel and Radioactive Waste Management

The IAEA Code of Practice on the International Transboundary Movement of Radioactive Waste was adopted by the IAEA General Conference and establishes a set of non-binding principles

⁵⁰¹ Art. 6(6). ⁵⁰² Art. 4(4). ⁵⁰³ Art. 2(2). ⁵⁰⁴ Art. 2(3). ⁵⁰⁵ Art. 9(6). ⁵⁰⁶ Art. 15.

⁵⁰⁷ Washington, 12 November 1986, in force 29 January 1987, 26 ILM 25 (1987), Art. III(1), (2) and (4); see E. C. Rose, 'Transboundary Harm: Hazardous Waste Management Problems and Mexico's Maquiladoras', 23 *International Law* 223 (1989); A. Moskonite, 'Criminal Environmental Law: Stopping the Flow of Hazardous Waste to Mexico', 22 *California Western International Law Journal* 159 (1991/2); V. L. Engfer, G. A. Partida, T. C. Vernon, A. Toulet and D. A. Renas, 'By-Products of Prosperity: Transboundary Hazardous Waste Issues Confronting the Maquiladora Industry', 28 *San Diego Law Review* 819 (1991).

⁵⁰⁸ Art. IV. ⁵⁰⁹ Ottawa, 28 October 1986, in force 8 November 1986, TIAS 11099.

⁵¹⁰ 1995 Agreement Between the Government of America and the Government of Malaysia Concerning the Transboundary Movement of Hazardous Wastes from Malaysia to the United States.

⁵¹¹ 1997 Agreement on the Transboundary Movement of Hazardous Waste from Costa Rica to the United States.

⁵¹² 2001 Agreement Between the Government of the United States of America and the Government of the Republic of the Philippines Concerning the Transboundary Movement of Hazardous Wastes from the Philippines to the United States.

designed to serve as guidelines.⁵¹³ Whether the Code of Practice constitutes an ‘international control system’ within the meaning of Article 1(3) of the Basel Convention is open to interpretation, but certainly the scheme it applies is less stringent than even the Basel Convention. The Code defines radioactive waste as ‘any material that contains or is contaminated with radionuclides at concentrations or radioactivity levels greater than the “exempt quantities” established by the competent authorities and for which no use is foreseen’.⁵¹⁴ Exempt quantities are levels below which the regulatory requirements do not apply because the individual and collective dose equivalents received from such levels are not significant for the purposes of radiation protection. These should be agreed by the authorities in the countries concerned with the international transboundary movement.⁵¹⁵ Spent nuclear fuel is not, for the purposes of the Code, considered to be radioactive waste.⁵¹⁶ Instead, this is dealt with by the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997 Joint Convention).⁵¹⁷

Despite its non-binding legal character, the Code is more limited in scope than the more stringent approaches set out in the Basel and Bamako Conventions. Its ‘obligations’ are so soft that it is questionable whether they provide any enforceable guidance: a state should minimise the amount of radioactive waste and take appropriate steps to ensure that radioactive waste within its territory, jurisdiction or control is safely managed and disposed of.⁵¹⁸ The Code recognises the sovereign right of a state to prohibit the movement of radioactive waste into, from or through its territory, and calls on states to ensure that movements are taken in a manner consistent with international safety standards.⁵¹⁹ Under the Code, transboundary movements should only take place ‘with the prior notification and consent of the sending, receiving and transit states in accordance with their respective laws and regulations’. States should have a relevant regulatory authority and appropriate procedures, and should not permit the receipt or sending of radioactive waste unless they have the capacity and regulatory structure to manage and dispose of the waste consistently with international safety standards.⁵²⁰ Finally, states are called upon to adopt national laws and regulations giving effect to the requirements of the Code, and to establish provisions for liability, compensation or other remedies arising from international transboundary movements of radioactive waste.⁵²¹

In contrast to the Code, the 1997 Joint Convention contains more stringent regulation of the transboundary movement of spent nuclear fuel or radioactive waste. The Convention is in part based on the concepts and practices set out in the 1990 Code. Article 27 of the Joint Convention is modelled on the Basel Convention and requires exporting parties to take appropriate steps to ensure that transboundary movement is authorised and takes place only with the prior

⁵¹³ IAEA Doc. GC(XXXIV)/920, 21 September 1990, Annex 1; D. Currie and J. van Dyke, ‘The Shipment of Ultrahazardous Nuclear Materials in International Law’, 8 *Review of European Community and International Environmental Law* 113 (1999).

⁵¹⁴ Section II. A ‘competent authority’ is ‘an authority designated or recognised by a government for specific purposes in connection with radiation protection and/or nuclear safety’ (*ibid.*).

⁵¹⁵ *Ibid.* ⁵¹⁶ *Ibid.*

⁵¹⁷ Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 5 September 1997, in force 18 June 2001, 36 ILM 1436 (1997), Art. 27.

⁵¹⁸ Section III, paras. 1 and 2. ⁵¹⁹ *Ibid.*, paras. 3 and 4. ⁵²⁰ *Ibid.*, paras. 5–7. ⁵²¹ *Ibid.*, paras. 8 and 9.

notification and consent of the state of destination.⁵²² An originating state may only authorise exports of waste if it can satisfy itself that the destination state has the administrative and technical capacity, as well as the regulatory structure, needed to manage the spent fuel or the radioactive waste in a manner consistent with the Joint Convention.⁵²³ Where a transboundary movement cannot be completed in conformity with the requirements of Article 27, and no alternative safe arrangement can be made, the originating state must take appropriate steps to allow the re-entry of the waste into its territory.⁵²⁴ Implementation is carried out through the submission of national reports prior to Review Meetings of Contracting Parties that are then scrutinised by other states parties. The fifth Review Meeting of the Contracting Parties was held in May 2015 at the IAEA headquarters in Vienna, where assessment continued of the implications for national programmes of the Fukushima Daichi accident.⁵²⁵

CONCLUSIONS

In 2002, at the WSSD, participant countries stated an aim to ensure by 2020 that ‘chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment, using transparent science-based risk assessment and management procedures, taking into account the precautionary approach’.⁵²⁶ A decade later, similar targets were set in the 2015 Sustainable Development Goals:

By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.⁵²⁷

By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.⁵²⁸

The international legal framework designed to achieve these goals, however, remains a complex and fragmented one. A single, overarching institutional and legal framework for governing the variety of environmental and human health risks posed by hazardous substances, activities and wastes is still lacking. Instead, the rules of international law relating specifically to chemicals and wastes are set out in a multitude of sources, many of which are inaccessible and difficult to comprehend easily. For some, the lack of a systematic approach to international legal regulation in the area is in fact an advantage given the complexity of the risk problem posed. For instance, David Wirth comments: ‘The wider the array of options, the greater the potential for creatively meeting new challenges.’⁵²⁹ Nonetheless, this flexibility has to be set against the significant problems for enforcement and consistent domestic implementation posed by the lack of a coordinated international regulatory approach.

⁵²² Art. 27(1)(i). ⁵²³ Art. 27(1)(iii) and (iv). ⁵²⁴ Art. 27(1)(v). ⁵²⁵ JC/RM5/04/Rev. 2.

⁵²⁶ Plan of Implementation of the World Summit on Sustainable Development, Chapter III, para. 23. ⁵²⁷ Target 12.4.

⁵²⁸ Target 12.5.

⁵²⁹ D. A. Wirth, ‘Hazardous Substances and Activities’, in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), 394, 422. One such new challenge may lie in the area of nanotechnology, which has given rise to a vast number of substances of often unknown environmental and health effects. See further D. Leary and B. Pisupati, ‘Emerging Technologies: Nanotechnology’, in D. Leary and B. Pisupati (eds.), *The Future of International Environmental Law* (Tokyo/New York: United Nations University Press, 2010), 227–47.

Since the first edition of this book appeared, there have been a number of significant developments in international law governing chemicals and wastes, reflected, in particular, in the consolidation and development of existing instruments and the adoption of new international conventions relating to chemicals and pesticides (1998), persistent organic pollutants (2001) and mercury (2013). These latter instruments reflect a commitment to establish and implement global minimum standards which are legally binding and (relatively) accessible, and which (at least in respect of POPs) give effect to a more precautionary approach to international regulation. They also reflect a commitment to make use of a mix of regulatory approaches, including trade mechanisms, prohibitions and information requirements (labelling in particular), but not the more innovative economic instruments adopted in other areas of international environmental law, such as in the climate change regime. In the medium term, it is plain that efforts will focus on continuing to encourage broad support for these instruments and their implementation, including through the augmentation of their lists of banned and restricted substances and the establishment of new non-compliance mechanisms. Initiatives are also being undertaken to improve coordination between the treaties in different fields, such as convening joint meetings of the Conference of the Parties to the Chemicals, POPs and Basel Conventions.⁵³⁰

Notwithstanding these important developments, much remains to be done. In the area of hazardous substances, there has been some progress in consolidating arrangements so as to remove disparities in, for example, legal obligations relating to transport, and to institute a globally harmonised classification and registration scheme. However, there has been little easing of the task of collecting and disseminating information and ensuring ease of use by those who need it most: citizens and workers.⁵³¹ Other gaps also exist. In most regions of the world, there are no international rules of general application on emergency preparedness and response, and the ILO's Convention on Emergency Preparedness should be accorded high priority as an instrument to be applied in the various regions. Also underdeveloped are arrangements for ensuring technology transfer and financial assistance to developing countries in order to implement international obligations for the safe management of hazardous substances.

The rules of international law relating to waste remain, with limited exceptions, aimed at regulating the disposal of waste rather than addressing and preventing its generation. There is now extensive international law regulating or prohibiting the disposal of hazardous and radioactive wastes into the marine environment, and the transboundary movement of such wastes (although the events of 2006, when Dutch-based company Trafigura caused significant environmental and health damage after it dumped some 500 tonnes of hazardous waste originating in Mexico in the Ivory Coast, underscored the fact that the international rules are far from fully effective).⁵³² These obligations are supported, or supplemented, by concepts such as the

⁵³⁰ Simultaneous extraordinary meetings of the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions were held in the Bali International Convention Centre in Nusa Dua, Bali, Indonesia, from 22 to 24 February 2010, in coordination with the eleventh special session of the Governing Council/Global Ministerial Environment Forum (GC/GMEF) of the United Nations Environment Programme which was held at the same venue from 24 to 26 February 2010. In subsequent years, the parties to the three conventions have adopted a series of identical decisions aimed at strengthening cooperation and coordination among them. See further <http://synergies.pops.int/Decisionmaking/Overview/SynergiesProcess/tabid/2615/language/en-US/Default.aspx>

⁵³¹ In the UNECE region, this task may be eased by initiatives such as the 2003 Pollutant Release and Transfer Register Protocol to the Aarhus Convention, which came into force on 8 October 2009.

⁵³² See e.g. R. Evans, 'Trafigura Fined €1m for Exporting Toxic Waste to Africa', *The Guardian* (online), 23 July 2010, www.guardian.co.uk/world/2010/jul/23/trafigura-dutch-fine-waste-export; D. Leigh, 'Trafigura Faces Criminal

'self-sufficiency principle' and the 'proximity principle', which also encourage communities to limit the amount of waste they generate by requiring them to dispose of the waste they themselves produce. Nonetheless, regulating disposal of wastes is an indirect means, at best, to incentivise reduced waste generation and it is clear that limiting the avalanche of waste that threatens to engulf all countries requires the development of strategies and legal rules that address the waste problem at source. There is some suggestion that the rules of international law might be encouraged to move in that direction: the establishment of quantitative targets and timetables for the recovery and reuse of hazardous and non-hazardous wastes is now on the international agenda, as is the emerging effort to encourage the use of cleaner technologies which aim at waste minimisation. Twenty years ago, Agenda 21 endorsed both approaches, and still provides a useful framework against which future international waste management and prevention policies can be judged.

In striving to meet the targets set by the Sustainable Development Goals, many point to the establishment of the Strategic Approach to International Chemicals Management (SAICM) as an important milestone. The SAICM is a policy framework designed to promote global chemical safety and has the overall objective of achieving sound management of chemicals throughout their life cycle so that, by 2020, chemicals are produced and used in ways that minimise significant adverse impacts on human health and the environment. It was adopted by an International Conference on Chemicals Management in Dubai in 2006 under the auspices of UNEP, the Inter-organisation Programme for the Sound Management of Chemicals (IOMC) and the Intergovernmental Forum on Chemical Safety (IFCS). It consists of the Dubai Declaration on International Chemicals Management, an Overarching Policy Strategy, and a Global Plan of Action.⁵³³ The latter two documents contain provisions relating to five broad areas (risk reduction, knowledge and information, governance, capacity-building and technical cooperation) and addressing illegal international traffic. To date, the major activities undertaken under the SAICM appear to be confined to information exchange, convening regional meetings and an innovative 'Quick Start Programme' that includes access to funding to 'support initial enabling capacity-building and implementation activities in developing countries, least developed countries, small island developing states and countries with economies in transition'. Of course, international environmental law is very familiar with soft law documents setting out broad strategic goals and plans of action. Only time will tell whether the SAICM is able to achieve effective, systematic governance of hazardous substances over their life cycle or whether it shares the fate of many other similar initiatives: setting out a number of aspirational objectives and planned actions that are forever waiting full implementation.

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13

The Polar Regions: Antarctica and the Arctic

CHAPTER OUTLINE

This chapter considers the special rules of international environmental law that have been established for the Antarctic and Arctic polar regions. The rules, which are more extensive for the former than the latter, include treaties dealing with:

1. activities in the Antarctic territory and environmental impact assessment (1959 Antarctic Treaty and its 1991 Environment Protocol); and
2. marine living resources (1972 Antarctic Seals Convention and 1980 Convention on Conservation of Antarctic Marine Living Resources).

Since the establishment of the Arctic Council in 1996, the Arctic polar region has also seen significant international regulatory activity. Developments discussed include:

- programmes and working groups of the Arctic Council; and
- new treaties on search-and-rescue and oil pollution preparedness.

Rules applicable in both regions have served, and continue to serve, as a model for the development of international environmental rules in other regions and globally.

INTRODUCTION

The Antarctic and the Arctic polar regions are subject to special regional rules of environmental protection, which are discussed in this chapter. These rules reflect the unique physical conditions of these areas and the important role they play in maintaining regional and global environmental conditions. They also provide useful models for the development of international environmental law in other regions and globally. For the Antarctic, the environmental rules have developed in the context of complex legal issues arising from claims made by some states to sovereign rights over Antarctic territory, and the opposing view of most other states that the Antarctic is part of the global commons and not subject to the exclusive jurisdiction of any state. These differences have not prevented the adoption of innovative and potentially far-reaching rules for the protection of the Antarctic environment and its ecosystem. The Arctic region, on the other hand, is subject to the undisputed jurisdiction of certain states, and for the most part environmental protection in that area is based on national environment laws, although these

may implement international environmental obligations. In 1991, Arctic states recognised the need for international cooperation to address threats to the Arctic environment and its ecosystem in the knowledge that it too plays an important role in maintaining the global environmental balance. In 1996, they established the Arctic Council, a high-level intergovernmental forum designed to provide a mechanism to address the common concerns and challenges faced by the Arctic governments and the peoples of the Arctic. During the past twenty years, the Arctic Council has focused much of its work on sustainable development and environmental protection, and has provided the forum for the negotiation of two binding agreements among the eight Arctic states on search-and-rescue (2011) and oil pollution preparedness (2013).

THE ANTARCTIC

The Antarctic continental region extends over 14 million square kilometres and comprises 26 per cent of the world's wilderness area, representing 90 per cent of all terrestrial ice and 70 per cent of planetary freshwater. The Antarctic also extends to a further 36 million square kilometres of ocean. It has a limited terrestrial life and a highly productive marine ecosystem, comprising a few plants (e.g. microscopic algae, fungi and lichen), marine mammals, fish and hordes of birds adapted to the harsh conditions, as well as the krill, which is central to the marine food chain and upon which other animals are dependent. The Antarctic plays an important role in maintaining the climatic system, and deep ice cores provide an important source of information about greenhouse gas concentrations and atmospheric temperatures from thousands of years ago. Since 1959, activities in the area have been limited to scientific research, fishing and tourism. Even these limited activities have not prevented parts of the region from being degraded by waste as a result of oil spills (such as the *Bahia Paraiso* in 1989), by the incidental destruction of flora and fauna and the adverse effects of tourism, and by economic pressures to exploit resources such as the Patagonian toothfish and some species of whales.¹

The Antarctic region is subject to a regime comprising five treaties: the 1959 Antarctic Treaty;² the 1972 Convention for the Conservation of Antarctic Seals (1972 Antarctic Seals Convention);³ the 1980 Convention on the Conservation of Antarctic Marine Living Resources (1980 CCAMLR);⁴ the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (1988 CRAMRA) (although it has never entered into force and has been largely superseded by the 1991 Antarctic Environment Protocol);⁵ and the 1991 Protocol on Environmental Protection to the Antarctic Treaty (1991 Antarctic Environment Protocol).⁶ In addition, under the 1959 Antarctic Treaty, numerous recommendations have been adopted, and under the 1980 CCAMLR a series of conservation measures have been adopted. Several other treaties, such as the 1982 UNCLOS, marine protection treaties, the 1989 Basel Convention and the 1997 Joint Safety Convention (IAEA), also include provisions applicable to the Antarctic region. Since the regime

¹ For instance, the minke whales at issue in Australia's whaling case against Japan in the ICJ (see *Whaling in the Antarctic (Australia v. Japan: New Zealand intervening)*, Judgment, ICJ Reports 2014, 226).

² Washington, 1 December 1959, in force 23 June 1961, 402 UNTS 71; fifty-three states are party.

³ London, 1 June 1972, in force 11 March 1978, 11 ILM 251 and 417 (1972); seventeen states are party.

⁴ Canberra, 20 May 1980, in force 7 April 1982, 19 ILM 841 (1980); www.ccamlr.org; thirty-five states and the EU are party.

⁵ Wellington, 2 June 1988, not in force; Misc. 6 (1989), Cmnd 634, 27 ILM 868 (1988).

⁶ Madrid, 4 October 1991, in force 14 January 1998, 30 ILM 1461 (1991); thirty-six states are party.

was initiated with the Antarctic Treaty in 1959, the international rules applicable to the region have increasingly addressed environmental concerns, and the area is now subject to a large body of environmental regulation. Apart from the substantive norms establishing environmental standards, including activities that are prohibited or regulated, the Antarctic Treaty regime has contributed significantly to the development of institutional and procedural techniques, which have been applied in other areas of international environmental law. In many ways, the Antarctic region has played a catalytic and innovative role, contributing to the progressive development of rules and techniques relating to information exchange, scientific advisory processes, environmental impact assessment, observation and inspection, the management of waste streams, liability for environmental damage, enforcement procedures and institutional arrangements.

From time to time, the issue of a UN role in Antarctica has been raised at the UN General Assembly. Early UN efforts began in the late 1950s, and continued again in 1983 as a result of growing interest in mineral exploitation in the region. In 1994, the General Assembly welcomed the designation of Antarctica as a nature reserve in the 1991 Environmental Protocol and commended the prohibition on mineral resource activities contained in that treaty.⁷ However, the earlier idea proposed by Malaysia and other states, which are not parties to the 1959 Antarctic Treaty, as well as non-governmental organisations, to turn the Antarctic region into a 'world park', prohibiting any human activity, has not met with universal approval. In 2005, the General Assembly, while deciding to remain seized on the 'Question of Antarctica', chose not to include the topic on the Assembly's agenda for the 63rd session in 2008.⁸

The Antarctic Treaty Regime

1959 Antarctic Treaty⁹

The 1959 Antarctic Treaty, which 'freezes' national claims to sovereignty in the continent,¹⁰ was not primarily intended to establish rules on environmental protection.¹¹ Nevertheless, a number of its provisions contribute incidentally to environmental protection in the region. Under Articles I and II, Antarctica is to be used for peaceful purposes only, including scientific investigation, and military activities are prohibited. Article V prohibits nuclear explosions and the disposal of radioactive waste material in Antarctica. Article IX allows parties having consultative status to take additional measures regarding, inter alia, the 'preservation and conservation of living resources in Antarctica'.¹²

⁷ UNGA Res. 49/80 (1994). See also UNGA Res. 51/56 (1996) and UNGA Res. 54/45 (1999).

⁸ UNGA Res. 60/47 (2005). See P. Beck, 'The United Nations and Antarctica, 2005: The End of the "Question of Antarctica"?', 42(3) *Polar Record* 217–27 (2006). Since 2005, the UN Secretary General has not submitted any further reports to the General Assembly on the 'Question of Antarctica'.

⁹ Antarctic Treaty, Washington, DC, 1 December 1959, in force 23 June 1961; 402 UNTS 71.

¹⁰ Seven states claim sovereign rights over parts of Antarctic territory: Argentina, Australia, Chile, France, New Zealand, Norway and the United Kingdom. To the extent that sovereign claims are maintained by these states the Antarctic area would not, at least in their eyes, be considered as part of the 'global commons'. Nevertheless, the area is often referred to as an example of the 'global commons' or of 'areas beyond the limits of national jurisdiction' within the meaning of Art. 21 of the Stockholm Declaration and Art. 2 of the Rio Declaration.

¹¹ The Antarctic Treaty applies to the area south of 60° South latitude, including all ice shelves (Art. VI).

¹² Art. IX(1)(f).

The 1959 Antarctic Treaty did not establish a permanent secretariat, although in July 2001 the twenty-fourth Antarctic Treaty Consultative Meeting agreed to establish such a body in Buenos Aires.¹³ The Antarctic Treaty Secretariat was established in September 2004, and is tasked with, inter alia, supporting and publishing documents emanating from the Antarctic Treaty Consultative Meetings. The annual Consultative Meetings of the Parties are held to ensure consultation on matters of common interest, to exchange information, to discuss the implementation of agreements and to recommend additional measures to the parties. Twenty-nine parties have consultative status under the Treaty, which allows them to vote, while twenty-four do not have such status.¹⁴ Decisions are taken by consensus among the consultative parties.

The meetings of the consultative parties to the Antarctic Treaty led to the first dedicated environmental measures for the area with the adoption in 1964 of the Brussels Agreed Measures for the Conservation of Antarctic Fauna and Flora.¹⁵ The 1964 Agreed Measures designate the Antarctic region as a 'Special Conservation Area'; the Measures apply to the continent and to ice shelves and do not prejudice high seas rights in which the parties must prohibit interference with native mammals or birds without prior authorisation, such authorisation to be granted only in specified circumstances, including scientific and educational research.¹⁶ The 1964 Agreed Measures also created 'Specially Protected Areas' with even stricter authorisation requirements.¹⁷

1972 Antarctic Seals Convention

The 1972 Antarctic Seals Convention applies to the sea area regulated by the 1959 Treaty. It requires parties to limit annually the number of seals that can be killed or captured, and grants complete protection to certain species.¹⁸ For those seals that can be taken, the hunting season is limited to a specified period in defined zones; the method of hunting is regulated; and scientific and breeding reserves are established. The Convention establishes more detailed obligations on exchange of information, according to which each party must provide annual reports to the contracting parties and to the non-governmental Scientific Committee for Antarctic Research (SCAR).¹⁹ The reports require fairly comprehensive information on the number of seals killed or taken, their sex and age, and details about the ships used in the hunt. No institutions are created, although meetings of the contracting parties are envisaged at least every five years and may be convened more regularly.²⁰

1980 CCAMLR²¹

The objective of the 1980 CCAMLR is the conservation (including 'rational use') of the marine living resources in the Antarctic Treaty area and in the surrounding area that forms part of the

¹³ Antarctic Treaty Consultative Meeting XXIV, Decision 1 (2001).

¹⁴ Art. IX. Parties achieve consultative status by 'conducting substantial scientific research activity' in the region: (Art. IX(2)).

¹⁵ Brussels, 13 June 1964, 17 UST 992, TIAS 6058. See also the London Arrangements for the Regulation of Antarctic Pelagic Whaling, 6 June 1962, 486 UNTS 263; C. C. Joyner, 'Recommended Measures under the Antarctic Treaty: Hardening Compliance with Soft International Law', 19 *Michigan Journal of International Law* 401 (1998).

¹⁶ Preamble.

¹⁷ Arts. VI(3) and VIII. By 1991, twenty Specially Protected Areas had been designated; the system was replaced with the entry into force in 1998 of the 1991 Protocol: see pp. 639ff.

¹⁸ Arts. 3 and 4 and Annex. ¹⁹ Art. 5(1) and (2). ²⁰ Arts. 6 and 7.

²¹ D. Vignes, 'La Convention sur la Conservation de la Faune et de la Flore Marines de l'Antarctique', 26 *Annuaire Français de Droit International* 741 (1980).

Antarctic marine ecosystem. Harvesting and associated activities are to be carried out in accordance with three principles of conservation adopted under the Convention:

1. preventing decreases in the size of any harvested population to a level below that which ensures its stable recruitment;
2. maintaining the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in paragraph (1) above; and
3. preventing changes or minimising risk of changes in the marine ecosystem which are not potentially reversible over two or three decades with the aim of making possible the sustained conservation of Antarctic marine living resources.²²

These principles go some way towards establishing criteria for 'rational use', and provide a legal basis for approaching 'sustainable development'. The ecosystem approach is an early example of a novel concept subsequently relied upon in other environmental agreements. The 1980 CCAMLR approach combines prevention (even 'precaution'), sustainability and restoration. The overall effort is similar to that adopted in subsequent agreements addressing other global environmental concerns, such as ozone depletion, climate change and biological diversity.

The 1980 CCAMLR provides that, for the Antarctic Treaty area, all parties are bound by Articles IV and VI of the 1959 Antarctic Treaty, irrespective of whether they are parties to that Treaty.²³ It also requires parties to observe, as and when appropriate, the 1964 Agreed Measures and such other environmental measures as recommended by the Antarctic Treaty consultative parties in the fulfilment of their 'special obligations and responsibilities . . . for the protection and preservation of the environment of the Antarctic Treaty area'.²⁴ Under the 1980 CCAMLR, no derogation is intended from the rights and obligations of parties to the 1946 International Whaling Convention or the 1972 Antarctic Seals Convention.²⁵

The 1980 CCAMLR is mainly administered by a Commission for the Conservation of Antarctic Marine Living Resources, membership of which is open to parties with full decision-making rights. The function of the Commission is to give effect to the objective and principles of the Convention, including the formulation, adoption and revision of conservation measures on the basis of the best scientific evidence available.²⁶ The Commission has legal personality and wide-ranging powers, particularly to acquire and disseminate information and notify parties of activities that are contrary to the Convention. The Commission compiles data on Antarctic marine living resources, gathers statistics on catches of harvested populations, and analyses and publishes this information.²⁷ The Commission has a limited compliance role: it can draw the attention of all parties to any activity which, in its opinion, affects the implementation by a party

²² Art. II(3). ²³ Art. IV(1). ²⁴ Art. V(1). ²⁵ Art. VI. On the 1946 Convention, see Chapter 11, pp. 534–8.

²⁶ Arts. VII–XIII, at Art. IX(1)(f). The Commission has adopted a significant body of conservation measures, relating, inter alia, to mesh sizes, fisheries, precautionary catches, scientific research, compliance, inspection, driftnet fishing and catch documentation schemes (those currently in force are available on the CCAMLR website, www.ccamlr.org/en/conservation-and-management/conservation-measures).

²⁷ Art. IX(1)(b), (c) and (d). Its catch documentation scheme for toothfish (Conservation Measure 170/XIX) came into force on 7 May 2000.

of obligations, as well as activities undertaken by nationals or vessels of non-parties.²⁸ In 2015, the Commission adopted a conservation measure to support the implementation of a Compliance Evaluation Procedure for all members.²⁹ The Commission is assisted by a consultative Scientific Committee for the Conservation of Antarctic Marine Living Resources,³⁰ and has established two subsidiary bodies on implementation and compliance, and administration and finance.

Provisions on environmental impact assessment were also included for the first time in a multilateral international treaty, albeit in embryonic form: the Scientific Committee must 'assess the effects of proposed changes in the methods or levels of harvesting and proposed conservation measures'.³¹ The Convention also establishes a system of observation and inspection to ensure compliance with the Convention, including procedures for boarding and inspection by designated observers and inspectors.³²

1988 CRAMRA³³

The 1988 CRAMRA marked a further stage in the development of international law for the protection of the Antarctic environment and the adoption of rules, procedures and institutions that went significantly beyond anything previously adopted in international law.³⁴ By the time of its adoption, however, CRAMRA was widely considered not to go far enough in protecting the Antarctic environment. The decision by France and Australia in the autumn of 1989 not to ratify CRAMRA made it unlikely that it will ever be brought into force.³⁵ The adoption in October 1991 of the Protocol on Environmental Protection left CRAMRA on ice, but the possibility of it re-emerging at some point cannot, in theory at least, be excluded. In the meantime, many of its innovative provisions have influenced developments in relation to other international environmental treaties, and it remains an important model for the further development of international

²⁸ Art. X(1) and (2). The Commission has also adopted a number of conservation measures dealing with monitoring and compliance systems, and the enforcement of fisheries regulations in the CCAMLR area, including: Conservation Measure 10-02 on Vessel Licensing; Conservation Measure 10-04 on Monitoring of Vessel Movements; Conservation Measure 10-09 on Vessel Transhipments; Conservation Measure 10-05 on the Catch Documentation System and conservation measures directed to IUU fishing (Conservation Measure 10-06 (2008), Scheme to Promote Compliance by Contracting Party Vessels with CCAMLR Conservation Measures; Conservation Measure 10-07 (2009), Scheme to Promote Compliance by Non-Contracting Party Vessels with CCAMLR Conservation Measures; and Conservation Measure 10-08 (2009), Scheme to Promote Compliance by Contracting Party Nationals with CCAMLR Conservation Measures).

²⁹ Conservation Measure 10-10 (2015). ³⁰ Arts. XIV-XVI. ³¹ Art. XV(2)(d). ³² Art. XXIV.

³³ J. Barnes, 'The Emerging Convention on the Conservation of Antarctic Marine Living Resources: An Attempt to Meet the New Realities of Resource Exploitation in the Southern Ocean', in J. I. Charney (ed.), *New Nationalism and the Use of Common Spaces* (Totowa, NJ: Allenheld, 1982); C. C. Joyner, 'The Antarctic Minerals Negotiating Process', 81 *American Journal of International Law* 888 (1987); L. A. Kimball, 'The Antarctic Minerals Convention' (Special Report for the World Resources Institute, 1988); F. Orrego Vicuña, *Antarctic Mineral Exploitation* (Cambridge: Cambridge University Press, 1988); M. P. Jacobsen, 'Convention on the Regulation of Antarctic Mineral Resources', 30 *Harvard International Law Journal* 237 (1989); A. Watts, 'The Convention on the Regulation of Antarctic Mineral Resource Activities', 39 *International and Comparative Law Quarterly* 169 (1990); R. Wolfrum, *The Convention on the Regulation of Antarctic Mineral Resource Activities* (Berlin: Springer, 1991). See also the first edition of this book which contained a more extensive discussion of the institutional aspects, procedures for prospecting, exploration and development, compliance provisions and liability and dispute settlement requirements of CRAMRA.

³⁴ See also the Antarctic Treaty Consultative Meeting Recommendation XI-I on Antarctic Mineral Resources, which led to negotiation of a legal regime for Antarctic mineral resources, 7 July 1981, 20 ILM 1265 (1981).

³⁵ CRAMRA will only enter into force after ratification by sixteen of the Antarctic Treaty consultative parties which participated in the final session of the fourth Special Antarctic Treaty Consultative Meeting provided that number includes all the states necessary to establish all of the institutions of the Convention in respect of every area of the Antarctica, including five developing countries and eleven developed countries (Art. 62(1)).

environmental law concerning rules on liability for environmental damage, environmental impact assessment, international supervision, institutional arrangements and dispute settlement.

CRAMRA was intended to be an integral part of the Antarctic Treaty system to establish the framework for determining whether Antarctic mineral resource³⁶ activities were acceptable and, if so, under what conditions they could be carried out.³⁷ Antarctic mineral resource activities comprised prospecting,³⁸ exploration³⁹ and development,⁴⁰ but did not include scientific research. CRAMRA recognised the dangers posed by mineral resource activities for the environment, and elaborated a range of measures designed to ensure environmental protection. CRAMRA also reflected an acknowledgment of the special responsibility of the Antarctic Treaty consultative parties to protect the Antarctic environment and dependent and associated ecosystems; to respect Antarctica's significance for the global environment and its scientific value and aesthetic and wilderness qualities; and to take into account the interests of the international community as a whole.⁴¹ To that end, decisions on Antarctic mineral resource activities were to be based upon the availability of adequate information and a precautionary approach: no such activities would be allowed to take place until it was judged, based upon assessment of possible impacts on the Antarctic environment and on dependent and associated ecosystems, that the activity in question would not cause environmental harm.⁴² CRAMRA also established, for the first time in a treaty, a comprehensive environmental impact assessment process, which was stated to be an objective and a principle of the Convention.⁴³ The operation of the assessment process is set out in some detail,⁴⁴ and applications for permits were to be accompanied by an assessment.⁴⁵

CRAMRA would also have prohibited activities until it could be judged that they would 'not cause significant adverse effects on global or regional climate or weather patterns', that safe technologies and procedures were available, and that there was a capacity to monitor key environmental parameters and to respond to accidents.⁴⁶ This would have established a high burden of proof on the person wishing to engage in such activities.

Under CRAMRA, Antarctic mineral resource activities would be prohibited outright in an area designated as a 'Specially Protected Area' or a 'Site of Special Scientific Interest' under Article IX of the Antarctic Treaty, or in any other area designated by the Commission as a protected area, and may be prohibited or restricted in adjacent areas.⁴⁷ Mineral resource activities would be required to respect other established uses of Antarctica, including the operation of stations,

³⁶ 'Mineral resources' are defined as 'all non-living natural non-renewable resources, including fossil fuels, metallic and non-metallic minerals' (Art. 1(6)).

³⁷ Arts. 2(1) and 5. The CRAMRA area is generally the same as that for the 1959 Antarctic Treaty, and CRAMRA expressly applies to impacts from activities conducted within that area which are felt outside the area, including impacts on dependent or associated ecosystems (Art. 5(1) and (4)). CRAMRA is also without prejudice to high seas rights, but it governs mineral activities on the continent's islands and ice shelves, and activities taking place in the seabed and subsoil of adjacent offshore areas up to the deep seabed, which could extend north of the 60° South line (Art. 5(3)).

³⁸ Arts. 37–38.

³⁹ Arts. 39–52 (Chapter IV). Although not in force, the procedure establishes a useful model illustrating the potential relationship between the private sector, a state and an international organisation.

⁴⁰ Arts. 53 and 54 (Chapter V). ⁴¹ Art. 2(3)(a), (b), (d) and (g).

⁴² Art. 4(1) and (2). Assessment is to include the possible effects on air and water quality, changes in atmospheric, terrestrial or marine environments, significant changes to flora and fauna, jeopardy to endangered species, and other degradation (Art. 4(2)).

⁴³ Arts. 2(1)(a) and 4(1)–(5). ⁴⁴ Art. 26(2), (3) and (4). ⁴⁵ Arts. 37(7)(d), 39(2)(e), 44(2)(b) and 53(2)(b).

⁴⁶ Art. 4(3) and (4). ⁴⁷ Art. 13.

scientific research, conservation and rational use of marine living resources, tourism, preservation of historic monuments, and navigation and aviation.⁴⁸

1991 Environment Protocol

On 4 October 1991, twenty-three of the then twenty-six Antarctic Treaty consultative parties and eight non-consultative parties signed the 1991 Antarctic Environment Protocol, including its then four Annexes, which established a fifty-year moratorium on Antarctic mineral resource activities from its entry into force on 14 January 1998.⁴⁹ A fifth Annex was adopted shortly thereafter, followed by a sixth in 2005. The Protocol and Annexes, to which no reservations are permitted,⁵⁰ comprise the most comprehensive and stringent regime of environmental protection rules ever established under the rules of public international law anywhere in the world. The Protocol was negotiated following the decision by France and Australia not to ratify CRAMRA on the grounds that it failed to provide adequate protection to the Antarctic environment.

At the heart of the Protocol is Article 7, which provides in unambiguous terms that '[a]ny activity relating to mineral resources, other than scientific research, shall be prohibited'.⁵¹ The Protocol adopts a fifty-year moratorium on any mineral resource activities in the Antarctic area. However, the Protocol permits modifications and amendments to be made at any time in accordance with the relevant provisions of the Antarctic Treaty, which require the agreement of all the Antarctic Treaty consultative parties.⁵² To overcome the unanimity problem, the Protocol allows a review conference to be called at the request of any of the Antarctic Treaty consultative parties fifty years after its entry into force.⁵³ The review conference will be able to adopt modifications or amendments to the Protocol, but only under strict conditions. They must be supported by a majority of the parties, including three-fourths of the Antarctic Treaty consultative parties at the time of the adoption of the Protocol.⁵⁴ They will only enter into force after ratification by three-fourths of the Antarctic Treaty consultative parties, including all states that were consultative parties at the time of the adoption of the Protocol.⁵⁵ Moreover, any modification or amendment to Article 7 must be accompanied by a binding legal regime on

⁴⁸ Art. 15.

⁴⁹ J. P. Puissochet, 'Le Protocole au Traité sur l'Antarctique Relatif à la Protection de l'Environnement', *Annuaire Français de Droit International* 755 (1991); C. C. Joyner, 'The 1991 Madrid Environmental Protocol: Rethinking the World Park Status for Antarctica', 1 *Review of European Community and International Environmental Law* 328 (1992); F. Francioni, 'The Madrid Protocol on the Protection of the Antarctic Environment', 28 *Texas International Law Journal* 47 (1993); C. Redgwell, 'Environmental Protection in Antarctica: The 1991 Protocol', 43 *International and Comparative Law Quarterly* 599 (1994); L. Cordonnery, 'Area Protection and Management in Antarctica: A Proposed Strategy for the Implementation of Annex V of the Madrid Protocol Based on Information Management', 14 *Environmental and Planning Law Journal* 38 (1997); D. French, 'Sustainable Development and the 1991 Madrid Protocol to the 1959 Antarctic Treaty: The Primacy of Protection of the Particularly Sensitive Environment', 2 *Journal of International Wildlife Law and Policy* 291 (1999).

⁵⁰ Art. 24.

⁵¹ The Final Report of the eleventh Antarctic Treaty Special Consultative Meeting notes that 'the harvesting of ice was not considered to be an Antarctic mineral resource activity' (cited in J. Verhoeven, P. Sands and M. Bruce (eds.), *The Antarctic Environment and International Law* (1992), 218).

⁵² Art. 25(1). The relevant procedures in the Antarctic Treaty are set out in Art. XII(1)(a) and (b).

⁵³ This will be in 2048. Already concerns are emerging of a push to mine Antarctic mineral resources by some states including China, Russia, India and Iran. See further, J. Perlez, 'China, Pursuing Strategic Interests, Builds Presence in Antarctica', *New York Times*, 3 May 2015; M. Atkin, 'China's interest in mining Antarctica revealed as evidence points to country's desire to become "Polar Great Power"', ABC News (Australia), 21 January 2015, www.abc.net.au/news/2015-01-20/china-s-desire-for-antarctic-mining-despite-international-ban/6029414

⁵⁴ Art. 25(2) and (3). ⁵⁵ Art. 25(4).

'Antarctic mineral resource activities that includes an agreed means for determining whether, and if so, under which conditions, any such activities would be acceptable', and must fully safeguard the interests of states referred to in Article IV of the Antarctic Treaty and apply the principles of the Antarctic Treaty.⁵⁶ Recognising the real possibility that the modification and amendment procedure will make it virtually impossible to adopt changes to Article 7, any party may give notice of its withdrawal from the Protocol if a modification or amendment has not entered into force within three years of the date of its communication to the parties.⁵⁷

The objective of the Protocol, which supplements the Antarctic Treaty without modifying or amending its provisions or derogating from rights and obligations of parties under other international instruments in force within the Antarctic Treaty system, is the comprehensive protection of the Antarctic environment and dependent and associated ecosystems, based upon the conviction that such a goal is 'in the interest of mankind as a whole'.⁵⁸ Antarctica is designated as a 'natural reserve, devoted to peace and science', but is not formally called a 'world park', as some states had wished.⁵⁹ The Protocol includes guiding principles to support environmental protection in the planning and conduct of the non-mineral resource activities that are permitted, principally scientific research and tourism, including research that is essential to the understanding of the global environment.⁶⁰ These principles include: the obligation to plan and conduct activities so as to limit adverse environmental impacts; to ensure the prior assessment of, and informed judgements about, possible impacts; and to carry out regular and effective monitoring to allow assessment of impacts and early detection of possible unforeseen effects.⁶¹

Apart from Article 7, the Protocol requires cooperation, and includes provisions on environmental impact assessment,⁶² together with six other Annexes that form an integral part of the Protocol.⁶³ Annex II, on 'Conservation of Fauna and Flora', which was amended at the thirty-second Antarctic Treaty Consultative Meeting in 2009,⁶⁴ prohibits the taking of or harmful interference with flora and fauna except in accordance with a permit, which may only be granted in relation to scientific or educational activities.⁶⁵ Permits may be granted only in exceptional circumstances for the Specially Protected Species designated in Appendix A to Annex II.⁶⁶ A proposal to designate a species as a Specially Protected Species can be submitted to the Antarctic Treaty Consultative Meeting by any party, the Committee for Environmental Protection (CEP),⁶⁷ the Scientific Committee on Antarctic Research or the Scientific Committee of the CCAMLR.⁶⁸ Species of animal or plant that are not native to the Antarctic Treaty area may only

⁵⁶ Art. 25(5). ⁵⁷ Art. 25(6); withdrawal will take effect two years after receipt of the notice of withdrawal.

⁵⁸ Preamble and Arts. 2 and 4. Under Art. 5, the parties to the Protocol undertake to avoid any inconsistency with other instruments of the Antarctic Treaty system.

⁵⁹ Art. 2. ⁶⁰ Art. 3(1) and (3).

⁶¹ Art. 3(1) and (2). The Protocol specifically requires activities to avoid: adverse effects on climate or weather patterns, air or water quality; changes in atmospheric, terrestrial, glacial or marine environments; changes in fauna and flora; further jeopardy to endangered species; and degradation of or substantial risk to areas of biological, scientific, historic, aesthetic or wilderness significance (Art. 3(2)(b)).

⁶² Art. 8 and Annex I; on environmental impact assessment generally, see Chapter 14.

⁶³ Art. 9(1). The Annexes have their own rules on, inter alia, emergency situations, review and amendment.

⁶⁴ Final Report of the Thirty-Second Antarctic Treaty Consultative Meeting, Baltimore, 6-17 April 2009, available at www.ats.aq/documents/ATCM32/fr/ATCM32_fr002_e.pdf, Measure 16 (2009): Amendment of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty: Conservation of Antarctic Fauna and Flora.

⁶⁵ Annex II, Art. 3(1) and (2). This revises and updates the 1964 Agreed Measures. ⁶⁶ *Ibid.*, Art. 3(4) and (5).

⁶⁷ The Committee was established by Art. 11 of the 1991 Protocol. ⁶⁸ Annex II, Art. 3(7).

be introduced by permit for controlled use, and the rationale justifying the introduction as well as precautions to be taken to prevent escape or contact with flora or fauna must be provided.⁶⁹ Dogs are prohibited in the Antarctic Treaty area,⁷⁰ and precautions are to be taken to prevent the accidental introduction of non-native micro-organisms.⁷¹ The Annex is supplemented by specific measures to manage human disturbance of Antarctic fauna and flora, including Recommendation XVIII-1: Guidance for Visitors to the Antarctic, adopted in 1994, and the Guidelines for the Operation of Aircraft Near Concentrations of Birds in Antarctica, adopted in 2004.

Annex III, on 'Waste Disposal and Waste Management', represents an advanced attempt by the international community to develop treaty obligations giving effect to a comprehensive waste prevention and minimisation strategy. It applies to all activities in the Antarctic Treaty area, and requires wastes produced or disposed of in the area to be reduced to minimise the impact on the Antarctic environment or interference with the natural values of Antarctica.⁷² Waste storage, disposal and removal, as well as recycling and source reduction, are essential for all activities, and wastes should be returned to the country from which the activities generating the waste were organised or to any other country in accordance with international agreements.⁷³ Past and present waste disposal sites on land, and abandoned work sites, are to be cleaned up by the generator of such wastes and the user of the sites.⁷⁴ Annex III requires the removal by the generator of eight categories of waste generated after entry into force of the Annex and for certain other wastes to be removed to the maximum extent practicable.⁷⁵ Disposal by incineration of certain combustible wastes will be permitted in accordance with certain conditions, but open burning of waste was to be phased out by the 1998/9 season.⁷⁶ The Annex limits disposal of other wastes on land and in the sea, requires all wastes to be stored to prevent their dispersal in the environment, and prohibits the introduction of certain products into the Antarctic Treaty area.⁷⁷ Finally, each party must establish a waste disposal classification system and prepare waste management plans and an inventory of locations of past activities.⁷⁸

Annex IV, on 'Prevention of Marine Pollution', applies to ships of parties that are used to support their operations while operating in the Antarctic Treaty area.⁷⁹ The Annex prohibits or regulates the discharge of oil and oily and other mixtures into the sea, and prohibits the discharge of noxious liquid substances, certain garbage and certain sewage.⁸⁰ Annex IV also establishes rules on ship retention capacity and retention facilities, design, construction and manning of ships, and preventive measures and emergency preparedness and response.⁸¹ The Annex is consistent with MARPOL 73/78 provisions on special areas and does not derogate from the rights and obligations of parties to MARPOL 73/78.⁸²

Annex V, on 'Area Protection and Management',⁸³ provides for the designation of Antarctic Specially Protected Areas and Antarctic Specially Managed Areas in which activities must be

⁶⁹ *Ibid.*, Art. 4(1), (3) and (5). ⁷⁰ *Ibid.*, Art. 4(2). ⁷¹ *Ibid.*, Art. 4(7). ⁷² Annex III, Art. 1(1) and (2).

⁷³ *Ibid.*, Art. 1(3) and (4).

⁷⁴ *Ibid.*, Art. 1(5). In 2013 the Antarctic Treaty Consultative Meeting adopted the Clean-up Manual to assist with addressing their obligations under Article 1(5).

⁷⁵ *Ibid.*, Art. 2. ⁷⁶ *Ibid.*, Art. 3.

⁷⁷ *Ibid.*, Arts. 4–7. Prohibited products include PCBs, non-sterile soil, polystyrene or similar packaging, or pesticides other than those required for scientific, medical or hygiene purposes (Art. 7).

⁷⁸ *Ibid.*, Art. 8. These are all subject to review by the Environment Committee (Art. 9). ⁷⁹ Annex IV, Art. 2.

⁸⁰ *Ibid.*, Arts. 3–6. ⁸¹ *Ibid.*, Arts. 9–12. ⁸² *Ibid.*, Art. 14; on MARPOL 73/78, see Chapter 11, pp. 488–92.

⁸³ Annex V was adopted at the sixteenth Antarctic Treaty Consultative Meeting, Bonn, 18 October 1991 and entered into force in 2002.

prohibited, restricted or managed in accordance with Management Plans adopted under the Annex.⁸⁴ Antarctic Specially Protected Areas are designated to protect outstanding environmental, scientific, historic, aesthetic or wilderness values or scientific research, and entry to these areas is prohibited except by permit.⁸⁵ Annex V redesignates Specially Protected Areas and Sites of Special Scientific Interests designated by Antarctic Treaty Consultative Meetings as Antarctic Specially Protected Areas.⁸⁶ Antarctic Specially Managed Areas are established to assist in the planning and coordination of activities, to avoid conflicts and to improve cooperation, and entry is not permitted without a permit.⁸⁷ Antarctic Specially Managed Areas may contain Antarctic Specially Protected Areas.⁸⁸ The Annex envisages Management Plans, designation procedures, the issuing of permits, the listing of historic sites and monuments, and information exchange and publicity.⁸⁹

Annex VI, on 'Liability Arising from Environmental Emergencies', was adopted in 2005 but is yet to come into force.⁹⁰ Each party must require operators to take reasonable preventative measures to reduce the risk of environmental emergencies and to have in place contingency plans.⁹¹ Parties must also require operators to take prompt and effective response actions in the aftermath of an environmental emergency; if they fail to do so, all parties are encouraged to take such action.⁹² Operators that have failed to fulfil their response action obligations will be strictly liable to pay the costs incurred by any parties which have taken response action on their behalf and can be subject to legal action in the courts of not more than one party where the operator is incorporated, has its place of business or has its principal or habitual place of residence.⁹³ Annex VI will enter into force as soon as all the states that were consultative parties in 2005 have approved it. At present, only twelve states have approved the measure: Australia, Finland, Italy, Netherlands, New Zealand, Norway, South Africa, Sweden, Peru, Poland, Spain and the United Kingdom.

Tourism has been discussed on an ad hoc basis at Antarctic Treaty Consultative Meetings for more than two decades. At the seventeenth Antarctic Treaty Consultative Meeting, in November 1992, five parties proposed an additional Annex to cover tourism and other non-governmental activities, which would require advance approval for tourist visas, limiting the areas which tourists could visit, and limiting the overall number of tourists and visits by NGOs. No agreement was then reached. The number of Antarctic tourists continues to increase annually, but there are different views among the parties as to how to manage tourism policy and on the adoption of concrete and binding measures. At the thirty-second Consultative Meeting, the parties adopted a resolution setting out general principles to be used to inform further work on managing Antarctic tourism activities: scientific research is accorded priority over all tourism activities and it must not contribute to the degradation of the Antarctic environment and associated ecosystems, and tourism must be undertaken in accordance with the Antarctic Treaty and all associated instruments as well as measures and resolutions of the Consultative Meeting.⁹⁴

⁸⁴ *Ibid.*, Art. 2. ⁸⁵ *Ibid.*, Art. 3(1) and (4).

⁸⁶ *Ibid.*, Art. 3(3). There are currently seventy-five Specially Protected Areas (www.ats.aq/devPH/apa/ep_protected_search.aspx?type=2&lang=e).

⁸⁷ *Ibid.*, Art. 4(1) and (3). There are currently seven Specially Managed Areas (www.ats.aq/devPH/apa/ep_protected_search.aspx?type=3&lang=e).

⁸⁸ *Ibid.*, Art. 4(4). ⁸⁹ *Ibid.*, Arts. 5–10.

⁹⁰ Annex VI was adopted at the twenty-eighth Antarctic Treaty Consultative Meeting, Stockholm, 6–17 June 2005.

⁹¹ *Ibid.*, Arts. 3(1) and 4(1). ⁹² *Ibid.*, Art. 5(1) and (2). ⁹³ *Ibid.*, Arts. 6(1) and (3) and 7(1).

⁹⁴ Antarctic Treaty Consultative Meeting, Res. 7 (2009).

The consultative parties have also adopted Tourism Guidelines (2004), General Guidelines for Visitors to the Antarctic (2011) and Yachting Guidelines for Antarctic Cruises (2014).⁹⁵

Institutional Arrangements

The operation of the Protocol is placed under the supervision of the Antarctic Treaty Consultative Meetings and the Committee for Environmental Protection. The meetings define general policy for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and adopt measures under Article IX of the Antarctic Treaty to implement the Protocol.⁹⁶ The Committee, subject to review by the meetings, provides advice and recommendations on implementation, including on: the effectiveness of measures taken under the Protocol, and the need for improvements or additional measures; the application of environmental impact assessment procedures; the means of minimising environmental impacts; the procedures for urgent actions, including environmental emergencies; the operation and elaboration of the Protected Area system; inspection procedures; environmental information; the state of the Antarctic environment; and the need for scientific research.⁹⁷ Each party is a member of the Committee, and observer status is open to any contracting party, to the President of SCAR and to the Chair of the Scientific Committee of the CCAMLR, as well as to other relevant scientific, environmental and technical organisations who have received the approval of the Antarctic Treaty Consultative Meeting.⁹⁸

Compliance and Related Matters

The Committee does not have a formal role in the compliance process. Rather, each party must take 'appropriate measures within its competence' to ensure compliance with the Protocol.⁹⁹ Additionally, each party must exert appropriate efforts consistent with the UN Charter to ensure that no one engages in any activity contrary to the Protocol, and to draw to the attention of all other parties any activity that affects implementation.¹⁰⁰ The Antarctic Treaty Consultative Meeting must draw to the attention of non-parties activities by it or those under its control, on any activity that affects implementation.¹⁰¹ The Protocol also provides for inspections by observers in accordance with Article VII of the Antarctic Treaty, and for the formulation, establishment and implementation of contingency plans for response to emergencies and incidents with potential adverse effects on the environment, as well as procedures for the immediate notification of and cooperative response to environmental emergencies.¹⁰² The Protocol provides for mandatory dispute settlement in respect of certain provisions, including Articles 7, 8, 15, the provisions of any Annex (except to the extent that the Annex provides otherwise) and Article 13 (in so far as it relates to these particular Articles or the Annexes).¹⁰³

⁹⁵ For further information, see www.ats.aq/e/ats_other_tourism.htm

⁹⁶ Art. 10(1). The meetings are to draw upon the advice and recommendations of the Committee and the advice of SCAR (Art. 10(2)).

⁹⁷ Art. 12(1). The Committee may consult with SCAR and the Scientific Committee for the Conservation of Antarctic Marine Living Resources, as well as other relevant organisations (Art. 12(2)).

⁹⁸ Art. 11(3) and (4). ⁹⁹ Art. 13(1). Each party is to provide an annual report on its implementation (Art. 17).

¹⁰⁰ Art. 13(2) and (4). ¹⁰¹ Art. 13(5). ¹⁰² Art. 15.

¹⁰³ Arts. 18–20; a Schedule to the Protocol defines an Arbitral Tribunal.

Other Treaty Provisions

There are also a number of other international legal instruments of global application that have important provisions of great relevance to the Antarctic. Particularly significant among these are the 1982 UNCLOS, the provisions of which apply to the Antarctic marine environment,¹⁰⁴ and the 1989 Basel Convention, which prohibits the export of hazardous wastes or other wastes for disposal within the Antarctic region.¹⁰⁵ Other treaties whose provisions apply to the Antarctic marine environment include the 1972 London Convention/1996 London Protocol and MARPOL 73/78.

THE ARCTIC

Unlike the Antarctic area, the Arctic area is part of the sovereign land or marine territory of eight states: Canada, Denmark, Finland, Iceland, Norway, Sweden, Russia and the United States. Respective parts of the Arctic area, which are under the jurisdiction of these states, are subject to their international legal obligations, including those relating to environmental protection. Nevertheless, beginning in September 1989, on the initiative of Finland, these eight states began cooperation on measures to combat threats to the Arctic ecosystem that could not effectively be addressed by each acting alone. This resulted in the adoption of the Arctic Environmental Protection Strategy (AEPS) 'to ensure the protection of the Arctic environment and its sustainable and equitable development, while protecting the cultures of indigenous peoples'.¹⁰⁶ Although not legally binding, the AEPS contains detailed commitments relating to objectives and principles, identifies problems and priorities for which actions are to be taken, and adopts measures for monitoring and assessment, the protection of the marine environment, emergency preparedness, and conservation of flora and fauna. The objectives of the AEPS include: protection of the Arctic ecosystem; protection, enhancement and restoration of the environmental quality and sustainable utilisation of natural resources; recognition and accommodation of the needs, values and practices of indigenous peoples; reviewing the state of the Arctic environment; and identifying, reducing and, as a final goal, eliminating pollution.¹⁰⁷ Guiding principles to implement the AEPS include:

- conservation, sustainable utilisation and protection for the benefit of and enjoyment of present and future generations;
- consideration for the value and interdependent nature of ecosystem components;
- informed assessment of the possible impacts of activities on the environment, including cumulative impacts;
- maintaining ecological systems and biodiversity;
- respecting the relationship with the global climate;
- taking into account scientific investigations and traditional knowledge;
- developing and sharing information and knowledge;
- developing a network of protected areas;

¹⁰⁴ Part XII, Protection and Preservation of the Marine Environment, Arts. 192–237; M. Peterson, 'Antarctic Implications of the New Law of the Sea', 16 *Ocean Development and International Law* 137 (1986).

¹⁰⁵ Art. 4(6). ¹⁰⁶ Arctic Environmental Protection Strategy (Rovaniemi, Finland), 14 June 1991, 7.

¹⁰⁷ AEPS, para. 2.1.

- promoting international cooperation; and
- ensuring mutual cooperation in fulfilling national and international responsibilities, including the use and transfer of and trade in effective and appropriate technology.¹⁰⁸

An Arctic Plan, with specific commitments, was adopted to address six serious environmental issues. With respect to persistent organic contaminants, the Arctic countries agreed to: undertake cooperative monitoring and research; consider the feasibility of developing national inventories on production, use and emissions; develop proposals for international action under the 1979 LRTAP Convention, the 1974 Paris Convention and the 1974 Helsinki Convention; reduce or control the use of chlordane, DDT, toxaphene and PCBs; and establish priorities and time-tables for a programme of emissions elimination.¹⁰⁹ To prevent oil pollution, the Arctic countries agreed to: cooperate in monitoring; consider establishing a reporting system on discharges and spills; take measures as soon as possible to adhere to 'the strictest relevant international standards within the conventions, to which the countries are parties, regarding discharges irrespective of origin'; and undertake joint action to strengthen recognition of the particularly sensitive character of ice-covered parts of the Arctic Ocean.¹¹⁰ With regard to heavy metals, it was agreed to undertake a programme of coordinated monitoring and research and to implement measures to control conditions that allow the release of heavy metals, including the implementation of best available technology.¹¹¹ For noise, the Arctic countries agreed to implement measures to avoid or mitigate the impact of noise on marine mammals, to improve their knowledge of the auditory function, communication and behaviour of marine mammals, and to determine the exposure of migrating stocks to noise.¹¹² With respect to radioactivity, the commitments were more general, and include little more than the development of common standards and techniques for monitoring and analysis, considering the development of more specific measures of cooperation to deal with emergencies, and the collation and exchange of data and information.¹¹³ In the context of the radiation damage caused by the Chernobyl accident in 1986, and the evidence of illegal dumping in Arctic waters of nuclear-powered submarines and other radioactive material by the former Soviet Union, these measures of the AEPS appear to be inadequate. Finally, in respect of oxidification, the AEPS called for: research on the current loadings and potential effects of acid deposition; consideration to be given to expanding deposition monitoring programmes; defining critical loads and setting and meeting target loads for sensitive ecosystems; and reducing emissions of sulphur and nitrogen by the use of 'best available technology'.¹¹⁴

The Arctic Council

In 1996, the Arctic states established a high-level intergovernmental forum, the Arctic Council, to provide a mechanism for coordinating their activities in the region and to oversee and coordinate the programmes established under the AEPS.¹¹⁵ Membership of the Council is

¹⁰⁸ Para. 2.2. ¹⁰⁹ Para. 5.1.

¹¹⁰ Para. 5.2. The AEPS refers to the 1969 CLC, the 1969 Intervention Convention, the 1971 Oil Pollution Fund Convention, the 1972 London Convention, the 1974 Paris Convention, MARPOL 73/78, the 1982 UNCLOS and the 1990 Oil Pollution Preparedness Convention.

¹¹¹ Para. 5.3. ¹¹² Para. 5.4. ¹¹³ Para. 5.5. ¹¹⁴ Para. 5.6.

¹¹⁵ Declaration on the Establishment of the Arctic Council, Ottawa, 19 September 1996, reprinted in 35 ILM 1382 (1996).

restricted to the eight Arctic states. In addition, six organisations representing Arctic indigenous peoples are granted status as 'permanent participants' in the Council.¹¹⁶ There is also provision for non-Arctic states, global and regional intergovernmental and interparliamentary organisations and non-governmental organisations to be granted observer status.¹¹⁷ The Chair and Secretariat of the Council rotate every two years among the members, beginning with Canada in 1996. The Council normally meets at the ministerial level biannually in the country holding the chairmanship.¹¹⁸ Outside of the Council's ministerial meetings, activities relating to the protection of the Arctic environment primarily take place within the Council's working groups and at meetings of Senior Arctic Officials held every six months. The Arctic Council's six Working Groups all have a Chair, Management Board or Steering Committee and a Secretariat.¹¹⁹ The Working Groups meet regularly to carry out programmes and projects mandated through Arctic Council Ministerial Declarations and other official documents resulting from the biannual ministerial meetings.

Arctic Monitoring and Assessment Programme

The Arctic Monitoring and Assessment Programme (AMAP) was established in 1991 to implement the AEPS.¹²⁰ The Arctic countries agreed: to develop AMAP to measure levels of anthropogenic pollutants and assess their effects;¹²¹ to take preventive measures regarding marine pollution in the Arctic, including by applying the principles reflected in the 1982 UNCLOS, by taking measures as soon as possible to adhere to the strictest relevant international standards within the conventions to which they are parties, and by jointly supporting the development of mandatory standards to improve protection from accidental pollution;¹²² and to adopt measures for emergency prevention, preparedness and response.¹²³ The measures envisaged for the protection of Arctic flora and fauna are more specific, recognising that the 1973 Polar Bears Agreement is the only agreement specifically adopted for the Arctic region. Apart from general cooperation, the Arctic countries agree to exchange information and experts; develop more effective laws, regulations and practices for the conservation of flora, fauna, diversity and their habitat; and propose strategies for enhanced conservation.¹²⁴

In June 1997, following the submission of a report by AMAP on Arctic pollution issues, the Arctic Council agreed to a number of measures designed to increase efforts to limit and reduce the emissions of pollutants into the Arctic environment, and to promote international

¹¹⁶ Para. 2. They include: the Aleut International Association, the Arctic Athabaskan Council, Gwich'in Council International, the Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, and the Saami Council.

¹¹⁷ Para. 3. At present, twelve non-Arctic countries are Permanent Observer States to the Arctic Council: France, Germany, the Netherlands, Poland, Spain, the United Kingdom, China, Italy, Japan, Korea, Singapore and India. In addition, nine international organisations and eleven non-governmental organisations are Arctic Council observers.

¹¹⁸ Paras. 4 and 5. The chairmanship of the Council was held by the United States in 1998–2000, Finland in 2000–2, Iceland in 2002–4, Russia in 2004–6, Norway in 2006–9, Denmark in 2009–11, Sweden in 2011–13, Canada in 2013–15 and the United States has assumed its second chairmanship for 2015–17. The Secretariat is located in Tromsø, Norway.

¹¹⁹ The six Working Groups are: Arctic Contaminants Action Program (ACAP); Arctic Monitoring and Assessment Programme (AMAP); Conservation of Arctic Flora and Fauna (CAFF); Emergency Prevention, Preparedness and Response (EPPR); Protection of the Arctic Marine Environment (PAME) and Sustainable Development Working Group (SDWG).

¹²⁰ www.amap.no ¹²¹ Arctic Monitoring and Assessment Programme (AMAP), para. 6. ¹²² Para. 7.

¹²³ Para. 8. ¹²⁴ Para. 9.1.

cooperation in order to reduce the identified pollution risks. In September 1998, the Arctic Council gave instructions for the development of an overall plan identifying actions to address the pollution sources identified by AMAP. This provided the basis for the development of the Action Plan to Eliminate Pollution of the Arctic, which was later renamed the Arctic Contaminants Action Program (ACAP) and constituted as the Arctic Council's sixth Working Group in 2006.

AMAP has produced a number of scientific assessments; among the most notable are the 2004 Arctic Climate Impact Assessment (ACIA) that reviewed Arctic climate vulnerability, the 2011 report on Arctic Pollution including an assessment of mercury in the Arctic and the 2013 Arctic Ocean Acidification Overview. Arctic climate change is a current priority focus of the working group with attention to issues on issues such as Arctic cryospheric change, Arctic Ocean acidification, and impacts of short-lived climate forcers (black carbon, tropospheric ozone and methane) on Arctic climate.

Arctic Contaminants Action Program

The Arctic Contaminants Action Program (ACAP) establishes a framework for cooperation to encourage national actions to reduce emissions and other releases of pollutants.¹²⁵ During the first phase of the ACAP, priority was given to addressing the following sources of pollution: persistent organic pollutants (POPs); heavy metals; radioactivity; and depletion of the ozone layer.¹²⁶ ACAP currently has four Expert Groups working to develop actions to reduce the pollution of the Arctic environment, focusing on POPs and mercury; hazardous wastes, short-lived climate pollutants (black carbon) and the Indigenous Peoples Contaminant Action Program.¹²⁷

Protection of the Arctic Marine Environment Working Group

The Protection of the Arctic Marine Environment Working Group (PAME) was established in 1991 and serves to review and address global and regional policies related to Arctic marine environmental protection. One of PAME's most important projects has been the Arctic Marine Strategic Plan (AMSP), which was first endorsed at the fourth Arctic Council Ministerial Meeting.¹²⁸ The Council requested PAME 'to conduct a comprehensive Arctic marine shipping assessment as outlined in the AMSP'.¹²⁹ This led to the publication of the Arctic Marine Shipping Assessment, which projects future Arctic shipping scenarios and makes recommendations on enhancing Arctic marine safety, protection of the Arctic people and the environment and on building the Arctic marine infrastructure. The initial assessment was approved by the Arctic Council at its sixth Ministerial Meeting in 2009 and followed up with progress reports in 2011 and 2013. In particular, the Council noted the increased marine access and navigation highlighted in the assessment and called for the 'development and implementation of suitable

¹²⁵ See www.arctic-council.org/index.php/en/acap-home

¹²⁶ The Action Plan gave priority to actions that were complementary to existing action plans and actions under the Arctic Council such as the Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-Based Activities, established in September 1998.

¹²⁷ See further, www.arctic-council.org/index.php/en/acap-home

¹²⁸ The current version is the Arctic Marine Strategic Plan, 2015–25, available at www.pame.is/index.php/shortcode/framework-documents?id=88

¹²⁹ Reykjavik Declaration on the Occasion of the Fourth Ministerial Meeting of the Arctic Council, 24 November 2004.

national and international regulations, where appropriate, to advance the safety of Arctic marine shipping, including marine pollution prevention, reduce accident risk and facilitate effective emergency response'.¹³⁰

In 2009, PAME also led the publication of the Arctic Council Offshore Oil and Gas Guidelines encouraging oil and gas regulators to adopt common environmental principles. Its current work plan for 2015–17 includes determining the adequacy of applicable international and regional commitments and promoting their implementation and compliance.¹³¹

Conservation of Arctic Flora and Fauna Working Group

The Conservation of Arctic Flora and Fauna Working Group (CAFF) provides policy recommendations on the conservation of Arctic biodiversity. It consists of national representatives from each of the eight Arctic Council member states, permanent participants and observers to the Council. A set of Operating Guidelines issued in 2007 calls for CAFF to meet at least twice a year, and sets out the management of meetings. CAFF itself is supported by several Expert Groups: the Circumpolar Seabird Group; the CAFF Flora Group; Marine Ecosystems; Terrestrial Ecosystems; Freshwater Ecosystems; and the Circumpolar Protected Areas Network (not currently active).

Emergency Prevention, Preparedness, and Response Working Group

The Emergency Prevention, Preparedness, and Response Working Group (EPPR) was established in 1991 under the AEPS 'to provide a framework for future cooperation in responding to the threat of environmental emergencies',¹³² though its mandate was expanded in 2004 to encompass natural disasters. EPPR has completed projects on, inter alia: Arctic Shoreline Clean-up; Environmental Risk Analysis of Arctic Activities; Behaviour of Oil and Other Hazardous and Noxious Substances Spilled in Arctic Waters; and Recommended Practices for Arctic Oil Spill Prevention. The current strategic plan of action envisages a number of further programmes encompassing oil pollution, radiological and other hazards and natural disasters.¹³³

Sustainable Development Working Group

The Sustainable Development Working Group (SDWG) was established in 1998 at the first Arctic Council Ministerial Meeting. Its objective is to protect and enhance the culture, health and economies of Arctic communities and inhabitants in an environmentally sustainable manner. From 2001 to 2006, the SDWG undertook fieldwork for a Survey of Living Conditions in the Arctic in Canada, Alaska, Greenland and Chukotka and has also produced reports on Arctic Human Health, Arctic Energy, Best Practices in Ecosystem-Based Ocean Management and Arctic Climate Change Adaptation. Its current work plan envisages projects and activities on, inter alia, mental wellness, traditional and local knowledge, adaptation to climate change, reindeer herding and Arctic Indigenous languages, as well as new projects in areas such as energy security, water resources, socio-economic data and food security.¹³⁴

¹³⁰ Tromsø Declaration on the Occasion of the Sixth Ministerial Meeting of the Arctic Council, 29 April 2009.

¹³¹ PAME Work Plan, 2015–17, available at www.pame.is/index.php/shortcode/pame-work-plan ¹³² AEPS, 3.

¹³³ EPPR Strategic Plan, June 2013, available at <http://arctic-council.org/eppr/about-eppr/strategic-plan-of-action>

¹³⁴ SDWG Work Plan, 2015–17, available at www.sdwg.org/project/sdwg-work-plan

Arctic Treaties

In addition to its six Working Groups, the Arctic Council has provided the forum for the conclusion of two binding agreements among the eight Arctic States. The first – the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic,¹³⁵ was signed in Nuuk, Greenland, at the 2011 Ministerial Meeting. The second, and more environmentally relevant – the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic (2013 Arctic Oil Pollution Preparedness and Response Agreement),¹³⁶ was signed in Kiruna, Sweden, at the 2013 Ministerial Meeting.

2013 Arctic Oil Pollution Preparedness and Response Agreement

Climate change, greater polar ice melt and increasing areas of open space in the Arctic have both increased the prospects for oil and gas development in the region and the potential for ecologically disastrous oil spills. Clean-up in such an environment would also pose a significant challenge.¹³⁷ With these developments in mind, the 2013 Arctic Oil Pollution Preparedness and Response Agreement seeks ‘to strengthen cooperation, coordination and mutual assistance among the parties on oil pollution preparedness and response in the Arctic in order to protect the marine environment from pollution by oil’.¹³⁸ The Agreement builds on the 1990 International Convention on Oil Pollution Preparedness, Response and Co-operation (to which the Arctic states are all parties), and takes account of ‘the “polluter pays” principle as a general principle to be applied’.¹³⁹ It applies to any ‘oil pollution incident’¹⁴⁰ that occurs in or may pose a threat to any marine area over which a state party to the Agreement exercises sovereignty, sovereign rights or jurisdiction.¹⁴¹

Article 6 articulates key requirements for an Arctic state receiving information of oil pollution or possible oil pollution, which is assessed to be an oil pollution incident, to notify all other Arctic states whose interests are affected or likely to be affected by such oil pollution incident, together with (i) details of its assessments and any action it has taken, or intends to take, to deal with the incident, including mitigation measures, and (ii) further information as appropriate.¹⁴² Article 6(2) provides that in the case of a severe oil pollution incident, notification to all Arctic states should occur without delay. In responding to the incident, parties may request assistance from any other party or parties.¹⁴³ Upon receipt of a request for assistance from a party affected

¹³⁵ Text available at <https://oaarchive.arctic-council.org/handle/11374/531>

¹³⁶ Text available at <https://oaarchive.arctic-council.org/handle/11374/529>

¹³⁷ H. Osofsky et al., ‘Preventing and Responding to Arctic Offshore Drilling Disasters: The Role of Hybrid Cooperation’, in J. Peel and D. Fisher (eds.), *The Role of International Environmental Law in Disaster Risk Reduction* (Leiden: Brill/Nijhoff, 2016), 392.

¹³⁸ Art. 1. ¹³⁹ Preamble.

¹⁴⁰ Art. 2(2) defines an ‘oil pollution incident’ as ‘an occurrence or series of occurrences having the same origin, which results or may result in a discharge of oil and which poses or may pose a threat to the marine environment, or to the coastline or related interests of one or more states, and which requires emergency action or other immediate response’.

¹⁴¹ Art. 3(1). By Art. 3(3) the Agreement shall not apply to any warship, naval auxiliary or other ship owned or operated by a state and used, for the time being, only on government non-commercial service. However, each party is to ensure by the adoption of ‘appropriate measures not impairing the operations or operational capabilities of such ships owned or operated by it’, that such ships act in a manner consistent, so far as is reasonable and practicable, with the Agreement.

¹⁴² Parties are also required to undertake appropriate monitoring activities in order to identify oil pollution incidents in and adjacent to their areas of jurisdiction (Art. 7(1)).

¹⁴³ Art. 8(1).

or likely to be affected by an oil pollution incident, parties must cooperate and provide assistance, which may include advisory services, technical support, equipment or personnel, for the purpose of responding to the incident.¹⁴⁴ Other provisions designed to facilitate a joint response to oil pollution incidents include requirements for cooperation and exchange of information,¹⁴⁵ for joint exercises and training,¹⁴⁶ and for the conduct of joint reviews of any oil pollution incident response operation.¹⁴⁷ Article 10 makes provision for the reimbursement of the costs of providing assistance in certain circumstances.

Parties must maintain national systems to respond promptly and effectively to oil pollution incidents, including a national contingency plan or plans for preparedness and response to oil pollution incidents.¹⁴⁸ Further, each party, as appropriate, in cooperation with other parties and with the oil and shipping industries, port authorities and other relevant entities, must establish: (1) a minimum level of pre-positioned oil spill combating equipment, commensurate with the risk involved, and programmes for its use; (2) a programme of exercises for oil pollution response organisations and training of relevant personnel; (3) plans and communications capabilities for responding to an oil pollution incident; and (4) a mechanism or arrangement to coordinate the response to an oil pollution incident with the capabilities to mobilise the necessary resources.¹⁴⁹ Equipping themselves in this way to respond to oil spills in the harsh Arctic environment will be a challenge for Arctic states as negotiators acknowledged. Nonetheless, the hope – as the United States representative noted – is that ‘the signing of this agreement will be the prompt to be ready.’¹⁵⁰

CONCLUSIONS

The Antarctic Treaty system has served ‘as a microcosm for the evolution of international environmental law and policy’. Environmental policies were put in place before there were ‘environmentalists’, and rules of a substantive, procedural and institutional nature were developed, on which other international agreements have frequently drawn.¹⁵¹ The various treaties adopted under the Antarctic system have provided important precedents that have internationalised domestic techniques and have significantly expanded upon existing international techniques. The Antarctic regime reflects an incremental approach to environmental protection for a region that forms part of the global commons, although its precedential value extends also to areas that are indisputably subject to national jurisdiction. Examples of the significant contribution made by the Antarctic system relate to: decision-making by international organisations, including the broad range of conservation measures adopted under CCAMLR; expanded use of techniques for environmental impact assessment, monitoring and access to information; the participation of non-governmental organisations in the legal process; and the development of new approaches to liability, including for environmental damage, which link civil and state liability approaches. Many of the provisions on the enforcement of rules also introduced novel elements to international law. The challenge over the coming few years will be

¹⁴⁴ Art. 8(3). ¹⁴⁵ Art. 12. ¹⁴⁶ Art. 13 ¹⁴⁷ Art. 11.

¹⁴⁸ Art. 4(1). See also Art. 5 on requirements for national authorities and contact points. ¹⁴⁹ Art. 4(2).

¹⁵⁰ Ambassador David Balton, US co-chair of the Arctic Council task force negotiating the Agreement, quoted in A. Boyd, ‘Binding Oil Spill Agreement Signed’, *BarentsObserver* (15 May 2013).

¹⁵¹ L. Kimball, ‘Environmental Law and Policy in Antarctica’, in P. Sands (ed.), *Greening International Law* (London: Earthscan, 1993), 122 at 138–9.

to continue efforts to increase the number of states which are party to the 1991 Antarctic Environment Protocol, and to develop the rules to make it work effectively, efficiently and equitably to protect the Antarctic environment. Since the Protocol does not incorporate all of the procedural and institutional innovations of the 1988 CRAMRA, further work is needed to develop such rules, including those on information and enforcement. In the meantime, the challenges facing the regime will include, increasingly, its decision-making authority and its relationship with other regimes, such as CITES and those for fisheries, as well as the prospect for renewed tensions over exploitation of Antarctic resources as other states, such as China, show an increasing interest in this region.

On the occasion of the fourth International Polar Year, the first ever Joint Session of the Antarctic Treaty Consultative Meeting and the Arctic Council took place in Washington on 6 April 2009. Consultative parties to the Antarctic Treaty and representatives of the Arctic Council adopted the Washington Declaration in which they encouraged 'the development of coordinated research and scientific observations at both poles to compare the current dynamics of polar areas and their contributions to the Earth's processes and changes'.¹⁵² In the intervening years, these coordinated efforts seem to be bearing some fruit in terms of the development of further institutional arrangements and the implementation of binding substantive obligations in the Arctic, even if 'a new comprehensive international legal regime to govern the Arctic Ocean' remains elusive.¹⁵³ In particular, recognition of the increased accessibility of the Arctic that results from decreases in the ice cover associated with climate change coupled with growing pressures for commercial and other activity, including access to resources, has seen the conclusion of a binding agreement on oil pollution, preparedness and response that may pave the way for a more cooperative approach to Arctic environmental challenges in the future.

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14

Environmental Impact Assessment

CHAPTER OUTLINE

The focus of Part III is on techniques and approaches for implementing the international environmental law principles and rules described in the previous chapters. This chapter discusses one of the most important of these techniques – environmental impact assessment (EIA). The chapter surveys requirements for EIA (and related processes of strategic environmental assessment and risk assessment) under:

1. non-binding international instruments such as the Rio Declaration and ILC Draft Articles on the Prevention of Transboundary Harm;
2. international and regional treaties, including the 1982 UNCLOS and 1991 Espoo Convention; and
3. procedures applied by multilateral development banks such as the World Bank.

The final part of the chapter considers the clarifications offered by international case law regarding how general EIA requirements apply in practice.

INTRODUCTION

Environmental impact assessments emerged internationally after the 1972 Stockholm Conference and are now an established international and domestic legal technique for integrating environmental considerations into socio-economic development and decision-making processes. An environmental impact assessment (EIA) describes a *process* that produces a written *statement* to be used to guide decision-making, with several related functions. First, it should provide decision-makers with information on the environmental consequences of proposed activities and, in some cases, programmes and policies, and their alternatives. Second, it requires decisions to be influenced by that information. And, third, it provides a mechanism for ensuring the participation of potentially affected persons in the decision-making process.

Since environmental impact assessments were first established in the domestic law of the United States under the 1969 National Environmental Policy Act, they have been progressively adopted in a very large number of national legal systems. Internationally, environmental impact assessments are required under numerous international conventions, in the requirements of various multilateral development banks, and in various non-binding instruments adopted at the regional and global levels. Principle 17 of the Rio Declaration states that:

environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

The mandatory language of Principle 17 confirmed that environmental impact assessments are required by general international law, particularly in respect of environmentally harmful activities which may have transboundary consequences, in order to meet a state's obligation to ensure that activities within its jurisdiction and control 'respect the environment of other States or of areas beyond national control'.¹ The language of Principle 17, however, is general, and does not provide the detail as to the minimum requirements that states need to satisfy.

To a certain extent the details relating to common approaches are reflected in the instruments described in this chapter and in the international cases which have arisen since Principle 17 was adopted: New Zealand's application to the ICJ concerning the resumption by France of underground nuclear testing (1995), the case concerning the Gabčíkovo–Nagymaros project (1997), the dispute between Ireland and the United Kingdom concerning the MOX plant (2001), the *Pulp Mills* case (2010), the ITLOS advisory opinion on *Responsibilities and Obligations in the Area* (2011), the ICJ decision in the *Costa Rica v. Nicaragua* cases (2015) and the recent *South China Sea* arbitration (2016). These cases confirm the circumstances in which international law requires the preparation of a prior environmental impact assessment before a state engages in, or permits, an activity which may have serious adverse impacts on the environment. As the ICJ declared in *Pulp Mills*, the practice of undertaking an environmental impact assessment 'where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context' is one that has gained sufficient acceptance among states such that 'it may now be considered a requirement under general international law'.² Other developments, described in the chapter, reflect the growing role of strategic environmental assessment (for instance, the 2003 Protocol on Strategic Environmental Assessment to the Espoo Convention)³ and risk assessments associated, in particular, with foodstuffs, genetically modified organisms and hazardous chemicals.

NON-BINDING INSTRUMENTS

Developments from Stockholm to Rio

The Principles of the 1972 Stockholm Declaration did not expressly identify environmental impact assessment as an instrument of national or international policy. However, the rationale underlying environmental impact assessment can be identified in the principle that 'rational planning constitutes an essential tool' for reconciling development and environment needs, and that planning 'must be applied to human settlements and urbanisation with a view to avoiding

¹ Chapter 6, p. 210.

² *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, ICJ Reports 2010, 14, para. 204.

³ See also EU Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, OJ L73, 14 March 1997, 5; and African Development Bank, Environmental and Social Assessment Procedures for African Development Bank's Public Sector Operations (2014), Annex I (Strategic Environmental and Social Assessment).

adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all'.⁴ An earlier draft of the Stockholm Declaration contained a draft Principle 20 which would have provided the elements of a clearer commitment to environmental impact assessment. The proposal set out in draft Principle 20 was not agreed at Stockholm following the objections of several developing countries, which maintained that the obligation to consult, dependent upon a prior determination that activities or developments could lead to significant adverse effects on the environment, might be abused by developed states to impede projects by developing countries. UN General Assembly Resolution 2995 (XXVII) (1972) partially revived draft Principle 20 by providing that technical information on proposed works should be supplied to other states where there is a risk of significant transboundary environmental harm, but that this information should be received in good faith and not used to delay or impede the development of natural resources.

Subsequent non-binding instruments developed the approach underlying draft Principle 20. Principle 5 of the 1978 UNEP draft Principles of Conduct proposed that:

states should make an environmental impact assessment before engaging in any activity with respect to a shared natural resource which may create a risk of significantly affecting the environment of another state or states sharing that resource.⁵

While Principle 5 was innovative, it did not provide any detail on how the assessment should be carried out, who should participate in it, and to what purpose it should be put. This gap was partly remedied by the 1982 UNEP Conclusions of the Study on the Legal Aspects Concerning the Environment Related to Offshore Mining and Drilling within the Limits of National Jurisdiction, which provided more detailed guidance on the appropriate modalities for carrying out an environmental impact assessment.⁶

Support for environmental impact assessment is found in a range of other acts of international institutions adopted after the Stockholm Conference,⁷ including in relation to development assistance.⁸ The 1982 World Charter for Nature supported the 'exhaustive examination' and 'assessment' of activities likely to pose a significant risk to nature or which may disturb nature,

⁴ Principles 14 and 15. ⁵ Principle 5. ⁶ UNEP/GC/Dec./10/14VI (1982).

⁷ See e.g. OECD Council Recommendation C(74)216, Analysis of the Environmental Consequences of Significant Public and Private Projects, 14 November 1974; OECD Council Recommendation C(79)116, Assessment of Projects with Significant Impact on the Environment, 8 May 1979; FAO Comparative Legal Strategy on Environmental Impact Assessment and Agricultural Development, 1982, FAO Environmental Paper; International Seabed Authority Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea, 28 July 1994, Annex, Section 7, UN Doc. A/RES/48/263; UNFCCC Modalities and Procedures for a Clean Development Mechanism defined by Art. 12 of the Kyoto Protocol, Decision 3/CMP.1, Annex, para. 37, in Report of the Conference of the Parties on Its First Session, Montreal, 28 November–10 December 2005, UN Doc. FCCC/KP/CMP/2005/8/Add.1; and see the discussion in Neil Craik, *The International Law of Environmental Impact Assessment: Process, Substance and Integration* (Cambridge: Cambridge University Press, 2008), 108–11.

⁸ OECD Council Recommendation C(85)104, Environmental Assessment of Development Assistance Projects and Programmes, 20 June 1985; OECD Revised Council Recommendation TAD/ECG(2007)9, Common Approaches on Environment and Officially Supported Export Credits; and see OECD, *Applying Strategic Environmental Assessment: Good Practice Guidance for Development Co-operation* (2006). See also the Millennium Development Goals, Target 7.A, calling for integration of the principles of sustainable development into country policies and programmes (there is no equivalent target under the 2015–30 Sustainable Development Goals though ensuring sustainability and minimising environmental impacts is a focus of a number of the Goals).

and required that activities should not proceed or should minimise potential adverse effects on the basis of the findings of the assessment or examination.⁹ By 1986, the Experts Group on Environmental Law of the World Commission on Environment and Development had identified environmental impact assessment as an ‘emerging principle of international law’, taking the view that states planning to carry out or permit activities which may significantly affect a natural resource or the environment should make or require an assessment of their effects before carrying out or permitting the planned activities.¹⁰ In 1987, UNEP prepared guidelines on the nature and extent of the obligation to carry out an assessment.¹¹ The UNEP Goals and Principles include three related objectives in ensuring the ‘environmentally sound and sustainable development’ of planned activities: ensuring that environmental effects should be taken into account before decisions are taken to allow activities to be carried out; providing for the implementation of national environmental impact assessment procedures; and encouraging reciprocal procedures for notification, information exchange and consultation on activities likely to have significant transboundary effects. The Principles, which proposed bilateral, regional or multilateral arrangements, reflect a minimum set of standards, which have been broadly endorsed and are reflected in state practice, at the national level and in binding international instruments.

UN Environmental Summits

UNCED consolidated the trend towards recognition of environmental impact assessment as a general requirement of international law with Principle 17’s call for mandatory EIA under national law ‘for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.’ References to environmental impact assessment also abound in Agenda 21. It called on all countries to ‘assess the environmental suitability of infrastructure in human settlements’, ensure that ‘relevant decisions are preceded by environmental impact assessments and also take into account the costs of any ecological consequences’, integrate environmental considerations in decision-making at all levels and in all ministries, and ensure the transparency of and accountability for the environmental implications of economic and other policies.¹² Agenda 21 also endorsed ‘comprehensive analytical procedures for prior and simultaneous assessment of the impacts of decisions’, including their environmental impacts and the assessment of ‘costs, benefits and risks’, and the systematic application of techniques and procedures for assessing environmental impacts.¹³ Environmental impact assessment was encouraged in specific Agenda 21 programmes, including deforestation, atmospheric protection and energy use, fragile mountain ecosystems, conservation of biological diversity, management of biotechnology, protection of oceans and seas, protection of freshwater resources, management of toxic chemicals, solid wastes and sewage, and radioactive wastes.¹⁴ Further, Agenda 21 endorsed the need for individuals, groups and organisations to participate in environmental impact assessment procedures.¹⁵

⁹ Paras. 11(b) and (c).

¹⁰ *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (1986), 58–62.

¹¹ Goals and Principles of Environmental Impact Assessment, UNEP/GC/Dec./14/25 (1987); see also UNGA Res. 42/184 (1987) and UNEP, *Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach* (2004).

¹² Paras. 7.41(b) and 8.4. ¹³ Paras. 8.5(b) and 10.8(b).

¹⁴ Paras. 9.12(b), 11.24(a), 13.17(a), 15.5(k), 16.45(c), 17.5(d), 18.22(c), 19.21(d), 21.31(a) and 22.4(d). ¹⁵ Para. 23.2.

The WSSD in 2002, and the Rio+20 Summit in 2012, broadly confirmed UNCED's requirements.¹⁶ The WSSD Plan of Implementation called for states to 'develop and promote the wider application of environmental impact assessments . . . to provide essential decision-support information on projects that could cause significant adverse effects to the environment'.¹⁷ The Plan of Implementation introduced a new impetus for integrated forms of assessment with frequent references to the need for integrated and multisectoral approaches throughout the document. It also called for EIA to link more effectively with economic and social impact assessment tools (prior to development occurring) and environment management tools (during the operational phase of development).¹⁸ Initiatives to introduce strategic environmental assessment under international instruments (discussed further below) have been one response.

ILC Draft Articles on Prevention of Transboundary Harm

Article 7 of the ILC's 2001 draft Articles on the Prevention of Transboundary Harm from Hazardous Activities draws upon the output of UNCED, and in particular Principle 17 of the Rio Declaration. Article 7 provides that:

Any decision in respect of the authorization of an activity within the scope of the present Articles shall, in particular, be based on an assessment of the possible transboundary harm caused by that activity, including any environmental impact assessment.

The ILC's commentary to its draft Articles notes that the requirement of assessment of adverse effects of activities has been incorporated in many international agreements, and that the practice of requiring an environmental impact assessment 'has become very prevalent' in order to assess whether a particular activity has the potential to cause significant transboundary harm.¹⁹

While Article 7 refers to environmental impact assessment, it is noteworthy that the animating concept of the draft Articles is not 'impact' but instead the potentially narrower notion of a 'risk of causing significant transboundary harm'.²⁰ The commentary to the draft Articles defines such risks as referring 'to the combined effect of the probability of occurrence of an accident and the magnitude of its injurious impact'.²¹ This terminology is reminiscent of technical understandings of risk,²² and may reflect the growing prominence of the technique

¹⁶ Plan of Implementation, e.g. paras. 19(e), 34(c) and 36(i); *The Future We Want*, Rio+20 Summit Outcome Document, para. 201. EIA is not specifically mentioned in the UN 2030 Agenda for Sustainable Development (A/RES/70/1) though it is likely to be a key tool for implementation of the Agenda and Sustainable Development Goals. See N. A. Robinson, 'The UN SDGs and Environmental Law: Cooperative Remedies for Natural Disaster Risks', in J. Peel and D. Fisher (eds.), *The Role of International Environmental Law in Disaster Risk Reduction* (Leiden: Brill/Nijhoff, 2016), 301.

¹⁷ Plan of Implementation, para. 135.

¹⁸ UNEP, *Environmental Impact Assessment and Strategic Environmental Assessment*, 15. ¹⁹ A/56/10, 402–3 (2001).

²⁰ Art. 1. Compare with the notion of an 'impact' in treaties concerning environmental impact assessment such as the Espoo Convention, p. 667. The language of 'risk' in the ILC draft Articles has been followed in decisions of the ICJ considering EIA.

²¹ Commentary to Art. 2, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 'Report of the International Law Commission on the Work of Its Fifty-Third Session', *Yearbook of the International Law Commission* (2001-II), Part 2, 148, 152, para. 2.

²² Technical understandings of risk define it in terms of the probability of a given event coupled with the severity of its likely consequences (see J. Adams, *Risk* (London: UCL Press, 1995)).

of risk assessment in international law alongside, and perhaps to some extent displacing, environmental impact assessment.

TREATIES AND OTHER BINDING INSTRUMENTS

A number of treaties and other binding instruments include provisions requiring the performance of an environmental impact assessment in specified circumstances. The 1985 EC Directive on Environmental Impact Assessment²³ led the way in providing international guidance on the nature and extent of an environmental impact assessment and the use to which it should be put, an approach subsequently adopted and extended in the 1991 UNECE Convention on Environmental Impact Assessment in a Transboundary Context (1991 Espoo Convention),²⁴ and in the 1991 Protocol on Environmental Protection to the Antarctic Treaty.²⁵ But these were by no means the first instruments supporting, in general terms, the use of environmental impact assessment. The 1974 Nordic Environmental Protection Convention required an assessment of the effects in the territory of one party of activities carried out in the territory of another party:²⁶ the Convention allows authorities to require an applicant for a permit to carry out environmentally harmful activities to 'submit such additional particulars, drawings and technical specifications' as are deemed necessary for evaluating the effects in another state. The UNEP Regional Seas Conventions, such as the 1986 Noumea Convention governing the marine and coastal environment of the South Pacific region, include general language on environmental impact assessment,²⁷ as does the 1982 UNCLOS (see further below). Article 14(1) of the 1985 ASEAN Agreement similarly delimits the extent of the obligation to carry out an environmental impact assessment, requiring that the contracting parties:

undertake that proposals for any activity which may significantly affect the natural environment shall as far as possible be subjected to an assessment of their consequences before they are adopted, and they shall take into consideration the results of their assessment in their decision-making process.

²³ Council Directive 85/337/EEC, OJ L175, 5 July 1985, 40 (the EIA Directive). The EIA Directive was amended three times, in 1997, 2003 and 2009, by Council Directives 97/11/EC, 2003/35/EC and 2009/31/EC, respectively. The initial Directive of 1985 and its three amendments were codified by Directive 2011/92/EU of 13 December 2011. Directive 2011/92/EU was amended in 2014 by Directive 2014/52/EU following a process of wide public consultation. An informal consolidated version of the EIA directive is available at http://ec.europa.eu/environment/eia/pdf/EIA_Directive_informal.pdf. The Commission has also published a number of guidance documents for EIA: inter alia, on the integration of climate change and biodiversity into EIA (2013); on the screening and scoping of projects (2001); and on the interpretation of definitions of certain project categories of Annexes I and II to the EIA Directive (2015) (see <http://ec.europa.eu/environment/eia/eia-support.htm>).

²⁴ See pp. 667–70. ²⁵ See Chapter 13, pp. 639–43.

²⁶ Stockholm, 19 February 1974, in force 5 October 1976; 13 ILM 511 (1974), Art. 6.

²⁷ 1976 Barcelona Dumping Protocol, Annex III; 1978 Kuwait Convention, Art. XI; 1981 Abidjan Convention, Art. 13; 1981 Lima Convention, Art. 8; 1982 Jeddah Convention, Art. XI; 1983 Cartagena Convention, Art. 12; 1985 Nairobi Convention, Art. 13; 1986 Noumea Convention, Art. 16; 1992 Black Sea Convention, Art. XV; 2002 Prevention and Emergency Protocol to the 1995 Barcelona Convention, Preamble and Art. 10; 1996 LBS Protocol to the 1995 Barcelona Convention, Preamble; 1995 SPA and Biodiversity Protocol to the 1995 Barcelona Convention, Preamble and Arts. 9, 13 and 17; 2008 Integrated Coastal Zone Management Protocol, Art. 19; and 2002 Antigua Convention, Arts. 6(2)(b), 10(2)(b) and 12(1)(c). See also Recommendation 17/3 of the Helsinki Commission (1996), recommending consultations with potentially affected contracting parties 'where an Environmental Impact Assessment is required by either national or international law'.

Many other international agreements addressing specific environmental media or particular activities provide for express or implied general obligations on environmental impact assessment. Such agreements include those governing the Antarctic,²⁸ atmospheric emissions of nitrogen oxide,²⁹ occupational health,³⁰ asbestos use,³¹ transboundary movements of waste,³² transboundary watercourses,³³ industrial accidents,³⁴ the energy sector,³⁵ public participation,³⁶ protection of mountainous areas,³⁷ and mining on the seabed of the high seas.³⁸ For some early conventions, which did not include provisions on environmental impact assessment, such as the 1971 Ramsar Convention, the parties have subsequently adopted guidelines.³⁹ The 1985 Vienna Convention and its 1987 Montreal Protocol do not expressly require that the development of replacement technologies for prohibited ozone-depleting substances be subject to an environmental impact assessment; this may limit the effectiveness of those treaties. The convoluted language of the 1992 Climate Change Convention appears to require an impact assessment of the measures taken to mitigate or adapt to climate change on a range of factors including the environment, and requires all parties to:

take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change.⁴⁰

The 2015 Paris Agreement also fails to mention environmental impact assessment directly though, in the sphere of adaptation, parties are to 'engage in an adaptation planning process' that 'may include ... [t]he assessment of climate change impacts and vulnerability,

²⁸ 1980 CCAMLR, Art. XV(2)(d); 1988 CRAMRA, Arts. 2(1)(a) and 4. ²⁹ 1988 NO_x Protocol, Art. 6.

³⁰ 1985 Occupational Health Services Convention, Art. 5. ³¹ 1986 Asbestos Convention, Art. 1(2).

³² 1989 Basel Convention, Art. 4(2)(f) and Annex V(A).

³³ 1992 Watercourses Convention, Arts. 3(1)(h) and 9(2)(j), and its 1999 Protocol on Water and Health, Art. 4(6). See also 1997 Watercourses Convention, Art. 12 (requiring notification of results of any environmental impact assessment).

³⁴ 1992 Industrial Accidents Convention, Art. 4 and Annex III.

³⁵ 1994 Energy Charter Treaty, Art. 19 ('each Contracting Party shall strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area'). See also its 1994 Protocol on Energy Efficiency and Related Environmental Aspects, Arts. 3(7) and 9.

³⁶ 1998 Aarhus Convention, Art. 6(2)(e) and Annex I. ³⁷ 2003 Carpathians Convention, Art. 12.

³⁸ Chapter 11, pp. 496–8.

³⁹ Recommendation 6.2 on Environmental Impact Assessment (1996), requested parties and national and international organisations to submit guidelines on EIAs, and called for the drafting of EIA guidelines; Res. VII.16 on Impact Assessment (1999) called on parties to 'reinforce and strengthen their efforts to ensure that any projects, plans, programmes and policies with the potential to alter the ecological character of wetlands in the Ramsar List, or impact negatively on other wetlands within their territories, are subjected to rigorous impact assessment procedures and to formalise such procedures under policy, legal, institutional and organisational arrangements'. Res. VIII.9 (2002) urged parties to make use of the 'Guidelines for Incorporating Biodiversity-Related Issues into Environmental Impact Assessment Legislation and/or Processes and in Strategic Environmental Assessment' produced by the Convention on Biological Diversity and appended to Res. VIII.9. See also Res. X.17 on Environmental Impact Assessment and Strategic Environmental Assessment: Updated Scientific and Technical Guidance (2008) and Handbook 16: Impact Assessment (2010, 4th edn).

⁴⁰ Art. 4(1)(f).

with a view to formulating nationally determined prioritized actions, taking into account vulnerable people, places and ecosystems.⁴¹

1982 UNCLOS

The 1982 UNCLOS requires the prior assessment of the effects of activities on the marine environment. Under Article 206:

When states have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments at appropriate intervals to the competent international organisations, which should make them available to all states.⁴²

The authoritative Virginia Commentary describes the obligation as being ‘similar to the requirements of some national environmental legislation, for example, the United States National Environmental Policy Act (NEPA) of 1969, to prepare environmental impact statements in respect of actions likely to affect the quality of the environment in a significant way’, its purpose being to ensure that such activities may be effectively controlled, and to keep other states informed of the potential risks and effects of such activities.⁴³ The Virginia Commentary describes prior assessment as ‘an essential part of a comprehensive environmental management system, and as a particular application of the obligation on States, enunciated in Art. 194, paragraph 2, to “take all necessary measures to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment”’.⁴⁴

Article 206 was the subject of an international dispute between Ireland and the United Kingdom. In October 2001, Ireland brought proceedings against the United Kingdom under UNCLOS concerning the authorisation by the United Kingdom of a new nuclear plant to manufacture mixed oxide (MOX) fuel. Ireland claimed, inter alia, that the United Kingdom had violated the obligation set forth in Article 206 of UNCLOS, in particular for authorising the plant on the basis of a 1993 environment impact statement which failed to assess the potential effects of the operation of the MOX plant on the marine environment of the Irish Sea,⁴⁵ including in relation to international movements of radioactive materials to be transported to and from the MOX plant, and which had not been updated to take into account the factual and legal developments which had occurred between 1993 and the plant’s

⁴¹ Paris Agreement, Art. 7(9)(c). ⁴² Arts. 205 and 206.

⁴³ M. H. Nordquist, S. Rosenne, A. Yancov and N. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary* (Leiden: Brill/Nijhoff, 1990), vol. IV, 122.

⁴⁴ *Ibid.*

⁴⁵ Ireland, Statement of Claim, 25 October 2000, paras. 7 and 31 (Ireland’s concerns related, inter alia, to the failure of the 1993 Environmental Impact Statement to consider properly or at all: the topography, seismology, geology, demography and meteorology of the site and its relation to the Irish Sea; the relationship with the marine environment of the Irish Sea and the assessment of the environmental impact of radioactive discharges into the sea; the impacts on flora and fauna in the Irish Sea, including commercial fisheries; the impacts of international transports of radioactive materials on the Irish Sea).

authorisation in 2001.⁴⁶ In December 2001, ITLOS prescribed provisional measures but declined to suspend the operation of the plant, as Ireland had requested, pending the constitution of the arbitral tribunal which would address the merits. In this regard, Judge Mensah expressed the view that:

none of the violations of the procedural rights arising from the duty to ... undertake appropriate environmental assessments are 'irreversible' in the sense that they cannot effectively be enforced against the United Kingdom by decision of the Annex VII arbitral tribunal, if the arbitral tribunal were to conclude that any such violations have in fact occurred.⁴⁷

A different – but minority – view was expressed by Ad Hoc Judge Szekely, to the effect that the inadequacy of the 1993 environmental impact statement justified more extensive provisional measures, 'since the environmental impact assessment is a central tool of the international law of prevention'.⁴⁸

The case never proceeded to the merits phase as the Annex VII arbitral tribunal suspended proceedings pending judgment of the European Court of Justice (ECJ) in a case brought by the European Commission against Ireland. The ECJ duly issued its judgment on 30 May 2006, finding that the provisions of UNCLOS dealing with protection of the marine environment came within the scope of Community competence and formed part of the Community legal order, thus giving the ECJ jurisdiction to deal with disputes relating to the interpretation and application of those provisions and to assess a member state's compliance with them.⁴⁹ The Annex VII arbitral proceedings were eventually terminated after Ireland withdrew its claim before the tribunal.⁵⁰

Claims regarding the extent of the obligations flowing from Article 206 were also raised in the *South China Sea Arbitration* decided by a tribunal convened under Annex VII in 2016.⁵¹ In this regard, the Philippines case against China (which did not accept the arbitration and refused to appear before the tribunal) was that Chinese artificial reef building activities in the South China Sea breached Article 206 of UNCLOS. The Philippines argued that China was 'fairly and squarely' required to carry out an environmental impact assessment within the meaning of Article 206, which, at a minimum, should have assessed possible effects on the marine ecosystem of the South China Sea, the coral reefs at issue, the biodiversity and sustainability of living resources there and endangered species.⁵² The Philippines contended that there was 'simply no evidence' that China had carried out such an assessment and that no science-based evaluation had been made public or communicated to the Philippines or to 'the competent international organizations' as required by Articles 205 and 206 of UNCLOS.⁵³ Short public statements and a report issued by the State Oceanic Administration of China declaring that the construction activities on reefs in the Spratly Islands would not harm ocean ecosystems were alleged by the Philippines to

⁴⁶ ITLOS Order, 3 December 2001, 41 ILM 405 (2002), para. 26; see Chapter 11, p. 477.

⁴⁷ Separate Opinion of Judge Mensah, 7. ⁴⁸ Separate Opinion of Judge Szekely, paras. 12–17.

⁴⁹ Case C-459/03, *Commission v. Ireland* [2006] ECR I-4635, para. 121.

⁵⁰ Order No. 6, Termination of Proceedings, PCA, 6 June 2008.

⁵¹ *The South China Sea Arbitration (Philippines v. China)*, Award of 12 July 2016, available at www.pcacases.com/pcadocs/PH-CN%20-%202020160712%20-%20Award.pdf

⁵² *Ibid.*, para. 911. ⁵³ *Ibid.*

fall short of what was required for an environmental impact assessment in accordance with Article 206.⁵⁴

While news reports and official government statements reviewed by the tribunal recorded Chinese assertions that the construction projects had ‘gone through scientific assessments and rigorous testing’;⁵⁵ the Philippines was unable to find any such assessments and the Chinese government failed to respond to a direct invitation from the tribunal ‘to indicate whether it has conducted an environmental impact study per Article 206 of the Convention and, if so, to provide the Tribunal with a copy.’⁵⁶

Given the scale and impact of the island-building activities being undertaken, the tribunal ruled that ‘China could not reasonably have held any belief other than that the construction “may cause significant and harmful changes to the marine environment”’ and accordingly was required by Article 206, ‘as far as practicable’ to prepare an environmental impact assessment. China was also held to be under an obligation to communicate the results of the assessment.⁵⁷ Despite the efforts of the tribunal, the Philippines and independent experts advising the tribunal, they had been unable to unearth ‘any report that would resemble an environmental impact assessment that meets the requirements of Article 206 of the Convention’;⁵⁸ moreover the documents from the State Oceanic Administration which had come to light fell short of the criteria specified under China’s own EIA law and were far less comprehensive than EIAs reviewed in past cases by other international courts and tribunals.⁵⁹ Although the tribunal was unable to make a definitive finding as to whether China had or had not prepared an EIA, it nonetheless found a clear breach of Article 206 given China’s failure to communicate any such assessment to UNCLOS or other competent international organisations.⁶⁰

Provisions requiring environmental impact assessment are also found in the 1994 Agreement relating to the implementation of Part XI of UNCLOS, governing the deep seabed area. Section 1.7 of the Annex to the 1994 Agreement requires applications for approval of exploration activities in the deep seabed of the high seas to be ‘accompanied by an assessment of the potential environmental impacts of the proposed activities’. In addition, Regulations adopted by the International Seabed Authority governing prospecting and exploration for polymetallic nodules and sulphides⁶¹ establish further obligations of states regarding environmental impact assessment as part of their duty to ‘cooperate with the Authority in the establishment and implementation of programmes for monitoring and evaluating the impacts of deep seabed mining on the marine environment’.⁶² The nature and content of environmental impact assessment required by these provisions was considered by the ITLOS Seabed Disputes Chamber in its 2011 *Advisory Opinion on Responsibilities and Obligations in the Area*, discussed below.⁶³

1986 Noumea Convention

Article 16 of the 1986 Noumea Convention requires each party to assess, within its capabilities, ‘the potential effects of [major projects which might affect the marine environment] so that

⁵⁴ *Ibid.* ⁵⁵ *Ibid.*, paras. 917–18; 920 ⁵⁶ *Ibid.*, para. 924. ⁵⁷ *Ibid.*, para. 988. ⁵⁸ *Ibid.*, para. 989.

⁵⁹ *Ibid.*, para. 990. ⁶⁰ *Ibid.*, para. 991.

⁶¹ Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area of 2000 and the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area of 2010.

⁶² Regulation 31(6) of the Nodules Regulation; Regulation 33(6) of the Sulphides Regulation. ⁶³ See pp. 679–80.

appropriate measures can be taken to prevent any substantial pollution of, or significant harm within, the Convention Area'.⁶⁴ On 21 June 1995, New Zealand filed proceedings at the ICJ challenging France's resumption of underground nuclear tests, on the ground, among others, that the tests violated France's obligation to carry out a prior assessment of their impacts on the environment, in accordance with Article 16 of the 1986 Noumea Convention.⁶⁵ New Zealand also asserted that customary international law required an environmental impact assessment to be carried out 'in relation to any activity which is likely to cause significant damage to the environment, particularly where such effects are likely to be transboundary in nature'.⁶⁶ The approach was endorsed by four South Pacific states and Australia, which had sought to intervene in the ICJ proceedings.⁶⁷ In response, France did not deny the existence of obligations under the 1986 Noumea Convention or customary law, but rather stated that too much should not be read into either source, and that environmental assessment requirements permitted a considerable 'margin of appreciation' to states as to the manner in which they sought to avoid causing damage.⁶⁸ As the Court found that it did not have jurisdiction to entertain the application, the arguments were not addressed by the majority. Two dissenting opinions, however, reflected an emerging recognition of the potential place of environmental impact assessment in customary law. Of particular note is Judge Weeramantry's opinion that the requirement to carry out an environmental impact assessment was 'gathering strength and international acceptance, and has reached the level of general recognition at which [the ICJ] should take notice of it'.⁶⁹ As described below, that opinion would appear to have informed the Court's decision two years later in the case concerning the Gabčíkovo–Nagymaros project, and culminated with the ICJ's declaration in the *Pulp Mills* case that transboundary environmental impact assessment may now be considered a requirement under general international law.

1991 Espoo Convention

The 1991 Espoo Convention was adopted under the auspices of the UNECE, and in several aspects it imposes more onerous requirements than the 1985 EC Directive on which it is based.⁷⁰ It came into force on 10 September 1997, and commits parties to take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impacts from proposed activities. The Convention requires that parties of origin must notify affected parties of certain proposed activities which are likely to cause a significant adverse transboundary impact, and requires discussions between concerned parties.⁷¹ The Convention defines 'impact' broadly to include:

⁶⁴ Art. 16(2). ⁶⁵ New Zealand Request, paras. 74–88, and CR/95/20, 10–25. ⁶⁶ New Zealand Request, para. 89.

⁶⁷ See e.g. Solomon Islands statement, para. 11; Australia statement, para. 33.

⁶⁸ CR/95/20, 71–2 ('On ne doit pas faire dire au droit coutumier en general, ni à la convention de Nouméa, plus qu'ils ne dissent eux-mêmes . . . [EIA] laisse . . . une marge considerable d'appréciation à chaque Etat concerné quant à la façon de s'assurer préalablement à l'entreprise d'activités qui seraient potentiellement dangeureuse, que leur incidence sur l'environnement ne serait pas dommageable').

⁶⁹ (1995) ICJ Reports 344. See also the Dissenting Opinion of Ad Hoc Judge Palmer that 'customary international law may have developed a norm of requiring [EIA] where activities may have a significant effect on the environment' (*ibid.*, 412, para. 91).

⁷⁰ W. Schrage, 'The Convention on Environmental Impact Assessment in a Trans-Boundary Context', 12 *Environmental Liability* 151 (2004).

⁷¹ Espoo, 25 February 1991, in force 10 September 1997; 1989 UNTS 309; 30 ILM 802 (1991), Art. 2(1), (4) and (5); forty-five states and the EU are party. Following an amendment in 2001 that entered into force in 2014, any UN member

any effect caused by a proposed activity on the environment including human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; it also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors.⁷²

A 'transboundary impact' is defined as:

any impact, not exclusively of a global nature, within an area under the jurisdiction of a party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another party.⁷³

The party of origin is required to ensure that, in accordance with the provisions of the Convention, an environmental impact assessment is undertaken 'prior to a decision to authorise or undertake a proposed activity listed in Appendix I that is likely to cause a significant adverse transboundary impact'.⁷⁴ Appendix III provides guidance for determining the environmental significance of activities not listed.⁷⁵ The assessment procedure must allow public participation in the preparation of the documentation, ensure an opportunity to the public living in areas likely to be affected to participate in procedures, and ensure that the opportunity provided to the public in the affected country is equivalent to that provided to the public of the party of origin.⁷⁶

The Convention requires transboundary cooperation. Under Article 3, the party of origin must notify any of the seventeen proposed activities listed in Appendix I which is likely to cause a significant adverse transboundary impact, as early as possible, to 'any party which it considers may be an affected party' and no later than when informing its own public.⁷⁷ The notification

state may accede to the Convention and become a party. 'Party of origin' means the party or parties 'under whose jurisdiction a proposed activity is envisaged to take place' (Art. 1(ii)); 'affected party' means the party or parties 'likely to be affected by the transboundary impact of a proposed activity' (Art. 1(iii)); assessment under the Convention may also fulfil requirements under the 1992 Industrial Accidents Convention (see Art. 4(4) of the latter Convention).

⁷² Art. 1(vii). ⁷³ Art. 1(viii).

⁷⁴ Art. 2(3). 'Proposed activity' means 'any activity or any major change to an activity subject to a decision of a competent authority in accordance with an applicable national procedure' (Art. 1(v)). The Convention applies, at a minimum, to the 'project level' of the proposed activity, although parties undertake to 'endeavour to apply the principles of environmental impact assessment to policies, plans and programmes' (*ibid.*, Art. 2(7)).

⁷⁵ Factors include: the size of the activity; its proposed location (not in or close to an area of special environmental sensitivity or importance); and its effects (will they be particularly complex and potentially adverse, and will they threaten the existing or potential use of an area, or will they cause additional loading which cannot be sustained by the carrying capacity of the environment?).

⁷⁶ Art. 2(2) and (6). An amendment to the Convention adopted in 2001, which entered into force on 26 August 2014, extends public participation rights to civil society, particularly NGOs. See Art. 1(x).

⁷⁷ The activities listed in Appendix I include: crude oil and certain other refineries; thermal power stations and other combustion installations with an output of 300 megawatts or more and nuclear installations; nuclear facilities; major cast iron and steel installations; asbestos plants; integrated chemical installations; construction of motorways, express roads, long-distance railway lines and long airport runways; pipelines; large trading ports; toxic and dangerous waste disposal installations; large dams and reservoirs; groundwater abstraction; pulp and paper manufacturing; major mining; offshore hydrocarbon production; major oil and chemical storage facilities; and deforestation of large areas. In an amendment to the Convention adopted in 2004 (not yet in force), the parties agreed to add the following additional activities to Appendix I: certain works for the transfer of water between river basins, wastewater treatment plants with a capacity exceeding 150,000 population equivalent, construction of overhead electrical power lines and wind farms.

must include information on the proposed activity, its possible transboundary impact, and the nature of the possible decision, and should allow a reasonable time for a response as to whether the affected party will participate in the procedure. Where the affected party decides not to participate, the operational provisions of the Convention will not apply, and the party of origin can decide on the basis of its national law and practice whether to carry out an assessment.⁷⁸

Once the affected party decides to participate in the procedure, and after it has received information relevant to the proposed activity and its possible significant transboundary impact, it must promptly provide the party of origin, at its request, with reasonably obtainable information relating to the potentially affected environment under its jurisdiction, where such information is necessary for the preparation of the environmental impact assessment.⁷⁹ Where a party considers that it is likely to be affected by a significant adverse transboundary impact of a proposed activity listed in Appendix I, and it has not been notified in accordance with Article 3(1), an exchange of 'sufficient information' must take place at the request of the affected party 'for the purposes of holding discussions on whether there is likely to be a significant adverse transboundary impact'.⁸⁰ If the parties agree that such an impact is likely, the provisions of the Convention are to apply. If there is no such agreement, any such party may submit the question to an inquiry commission established under Appendix IV unless another method of settling the question is agreed.⁸¹ Concerned parties must ensure that the affected party's public is informed about the proposed activity and is provided with an opportunity to make comments or objections to the competent authority of the party of origin.⁸²

The documentation to be submitted to the competent authority of the party of origin must contain the information required in Appendix II. This includes, but is not limited to, descriptions of: the proposed activity and its purpose; reasonable alternatives and the 'no-action alternative'; the environment likely to be significantly affected and its alternatives; the potential environmental impact, its alternatives and an estimation of its significance; and mitigation measures.⁸³ Indications should also be given of predictive methods, underlying assumptions and relevant environmental data used, gaps in knowledge and uncertainties, an outline for monitoring and management and any plans for post-project analysis, and a non-technical summary with appropriate visual presentations.⁸⁴ The documentation must be provided to the affected party and distributed to its authorities and public in areas likely to be affected, and the comments of those authorities and that public are to be submitted to the competent authority of the party of origin 'within a reasonable time before the final decision is taken on the proposed activity'.⁸⁵

Under Article 5, consultations must take place between the party of origin and the affected parties concerning the potential transboundary impact and measures to reduce or eliminate the impact. These may relate to alternatives to the proposed activity (including the 'no-action alternative' and mitigating measures), other forms of mutual assistance, and any other appropriate matters. In taking the final decision on the proposed activity, the parties must take due account of the outcome of the environmental impact assessment, including the documentation, as well as the comments received under Articles 3(8) and 4(2) and consultations under

⁷⁸ Art. 3(4). The operational provisions are Arts. 4–7. ⁷⁹ Art. 3(6).

⁸⁰ Art. 3(7). Decision 1/IV of the Meeting of the Parties establishes an agreed format for notification.

⁸¹ Appendix IV sets out the rules of procedure for the establishment of a compulsory inquiry commission.

⁸² Art. 3(8). See Decision II/3 of the Meeting of the Parties, on public participation. ⁸³ Art. 4(1) and Appendix II.

⁸⁴ Appendix II. ⁸⁵ Art. 4(2).

Article 5.⁸⁶ The party of origin must inform the affected party of the final decision and the reasons and considerations on which it was based.⁸⁷ If new information that could have materially affected the decision becomes available to a concerned party after the decision was made, that party shall inform other concerned parties and, as requested, hold consultations on revision of the decision.⁸⁸

A further innovation of the Convention is the provision of requirements on post-project analysis and follow-up. Concerned parties must decide, at the request of any one of them, whether and to what extent a post-project analysis is to be carried out, including surveillance of the activity and a determination of any adverse transboundary impact.⁸⁹ The objectives of a post-project analysis are set out in Appendix V; they include monitoring compliance with authorisation conditions and the effectiveness of mitigation measures; a management review; and verification of past predictions. Where the post-project analysis establishes reasonable grounds for concluding that there is a significant adverse transboundary impact or factors which may result in such an impact, the concerned parties must consult on 'necessary measures' to reduce or eliminate the impact.⁹⁰

The Convention also provides for bilateral and multilateral cooperation to implement its provisions in accordance with the elements set out in Appendix VI, and on the development of research programmes.⁹¹ Institutional arrangements include an annual Meeting of the Parties, which is charged with keeping the implementation of the Convention under review, with the assistance of the secretariat.⁹² In 2001, an Implementation Committee was established to review compliance by the parties with their obligations under the Convention, with a view to assisting them fully to meet their commitments.⁹³

A number of more general provisions of the Convention are also relevant to the further development of international law in relation to environmental assessment, information and cooperation. Concerned parties must enter into discussions, at the request of any such party, on whether a proposed activity not listed in Appendix I is likely to cause a significant adverse transboundary impact, and therefore should be treated as if so listed.⁹⁴ Appendix III provides general guidance to assist in the determination of the environmental significance of activities not listed in Appendix I, by virtue of one or more criteria, including its size, location and effects. The Convention does not affect parties' rights under national laws, provisions or practices to protect information the supply of which would be prejudicial to industrial and commercial secrecy or national security, and does not affect the right of a party to implement more stringent measures.⁹⁵ Moreover, the Convention does not prejudice 'any obligations of the parties under international law with regard to activities having or likely to have a transboundary impact'.⁹⁶

2003 Strategic Environmental Assessment Protocol

On 21 May 2003, in Kiev, a Protocol on Strategic Environmental Assessment was adopted that came into force on 11 July 2010.⁹⁷ Under the Protocol, parties are required to evaluate the

⁸⁶ Art. 6(1). ⁸⁷ Art. 6(2). ⁸⁸ Art. 6(3). ⁸⁹ Art. 7(1). ⁹⁰ Art. 7(2). ⁹¹ Arts. 8 and 9. ⁹² Art. 13.

⁹³ Decision II/IV (2001), revised as Decision III/2, which provides the structure and functions of the Implementation Committee and procedures for review of compliance.

⁹⁴ Art. 2(5). ⁹⁵ Art. 2(8) and (9). ⁹⁶ Art. 2(10).

⁹⁷ Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, Kiev, 21 May 2003, in force 11 July 2010, Doc. ECE/MP.EIA/2003/2. There are currently thirty parties to the Protocol. See also J. De Mulder, 'The Expansion of Environmental Assessment in International Law: The

environmental consequences of their official draft plans and programmes, including effects on human health. The Protocol also addresses proposals for policies and legislation in states, but strategic environmental assessment is not mandatory in this context.⁹⁸ Strategic environmental assessment differs from conventional environmental impact assessment in that it takes place earlier in the decision-making process and has a much broader scope than the single project that is generally the subject of environmental impact assessment. In theory, therefore, strategic environmental assessment is a key tool for achieving sustainable development allowing 'upstream' planning to minimise the potential for environmental impact from the implementation of subsequent specific projects.⁹⁹

The principal obligation established by the Protocol is for parties to undertake strategic environmental assessment for specified plans and programmes that are likely to have significant environmental, including health, effects.¹⁰⁰ As in the parent Convention, relevant effects for assessment are defined broadly extending to 'any effect on the environment, including human health, flora, fauna, biodiversity, soil, climate, air, water, landscape, natural sites, material assets, cultural heritage and the interaction among these factors'.¹⁰¹ Plans and programmes that attract a requirement for strategic environmental assessment include those prepared for agriculture, forestry, fisheries, energy, industry including mining, transport, regional development, waste management, telecommunications, tourism, town and country planning or land use, and which set the framework for future development consent for projects listed in Annex I to the Protocol (mirroring Appendix I to the Convention), as well as any other project listed in Annex II that requires an environmental impact assessment under national legislation.¹⁰² For other plans and programmes that fall outside these categories, a party may still decide to carry out a strategic environmental assessment if it determines there will be significant environmental or health effects, applying the criteria set out in Annex III.

Like the Espoo Convention, the Protocol contains a number of innovative provisions. These include requirements for transparency and public participation (including by NGOs) in strategic decision-making,¹⁰³ provision for transboundary consultations,¹⁰⁴ and post-decision monitoring. The relevant provisions of the Protocol apply also to the Aarhus Convention.¹⁰⁵

1991 Antarctic Environment Protocol

Article 8 of the 1991 Antarctic Environment Protocol requires prior assessment of the impacts of activities on the Antarctic environment or on dependent or associated ecosystems. The detailed obligations take a different approach from the 1991 Espoo Convention. They establish a range of procedures, the use of which is dependent on whether the activity is expected to have (a) less than a minor or transitory impact; or (b) a minor or transitory impact; or (c) more than a minor or

Protocol on Strategic Environmental Assessment to the Espoo Convention', 18 *Environmental Law and Management* 269 (2006).

⁹⁸ Art. 13.

⁹⁹ K. Ahmed and E. Sánchez-Triana (eds.), *Strategic Environmental Assessment for Policies: An Instrument for Good Governance* (World Bank, 2008); S. Marsden, *Strategic Environmental Assessment in International and European Law* (London: Earthscan, 2008).

¹⁰⁰ Art. 4.1. ¹⁰¹ Art. 2.7.

¹⁰² Art. 4.2. Annex II covers some ninety activities ranging from intensive agriculture projects, to manufacturing installations and tourist facilities.

¹⁰³ Art. 10. ¹⁰⁴ Art. 12. ¹⁰⁵ Chapter 15, pp. 710–12.

transitory impact.¹⁰⁶ This approach is similar to that recommended in paragraph 11 of the 1982 World Charter for Nature. The assessment must be:

applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and nongovernmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities.¹⁰⁷

Assessments are also required for any change in activity, including an increase or decrease of intensity, the decommissioning of a facility, or otherwise.¹⁰⁸

Annex I to the Protocol sets out a five-stage procedure for carrying out the assessment.

- (1) In the preliminary stage, the proposed activity is considered in accordance with national procedures, and, if the activity is determined to have less than a minor or transitory impact, the activity may proceed.¹⁰⁹
- (2) If the activity will have a minor or transitory impact or more, an Initial Environmental Evaluation will be prepared, which should contain sufficient information to assess whether the activity will have more than a minor or transitory impact.¹¹⁰ The information should include a description of the proposed activity, including its purpose, location, duration and intensity, and a consideration of any alternatives and impacts, including cumulative impacts. If this evaluation indicates that a proposed activity is likely to have no more than a minor or transitory impact, the activity may proceed subject to compliance with appropriate procedures, including monitoring of impacts.¹¹¹
- (3) If this evaluation indicates a likelihood of more than a minor or transitory impact, a Comprehensive Environmental Evaluation must be prepared, and must include descriptions of the proposed activity, the initial and predicted future environment reference state, and methods and data used to forecast impacts.¹¹² The Comprehensive Evaluation will also include: an estimation of likely and direct impacts; indirect or second order and cumulative impacts; mitigation measures; unavoidable impacts; effects on the conduct of scientific research; gaps in knowledge and uncertainties; a non-technical summary; and a contact person or organisation.¹¹³
- (4) The draft Evaluation is to be made publicly available, circulated to all parties and forwarded to the Protocol's Committee on Environmental Protection, with a ninety-day comment period and at least 120 days before the next Antarctic Treaty Consultative Meeting.¹¹⁴ The proposed activity may not proceed until the draft Evaluation has been considered by the Antarctic Treaty Consultative Meeting on the advice of the Committee, within a maximum period of fifteen months from the date of the draft's circulation.¹¹⁵
- (5) A final Evaluation must address comments received and be circulated to all parties and made publicly available at least sixty days before the commencement of the proposed activity.¹¹⁶

¹⁰⁶ Art. 8(1). Annex I to the Protocol does not apply to emergencies relating to the safety of human life or of ships or aircraft or other high-value equipment or facilities, or the protection of the environment (Annex I, Art. 7).

¹⁰⁷ Art. 8(2). ¹⁰⁸ Art. 8(3). ¹⁰⁹ Annex I, Art. 1. ¹¹⁰ Annex I, Art. 2(1). ¹¹¹ Annex I, Art. 2(2).

¹¹² Annex I, Art. 3(1) and 2(a)–(c). ¹¹³ Annex I, Art. 3(2)(d)–(f). ¹¹⁴ Annex I, Art. 3(3) and (4). See also Art. 6.

¹¹⁵ Art. 3(5). ¹¹⁶ Art. 3(6).

The decision on whether to proceed with a proposed activity must be based on the Comprehensive Evaluation and other relevant considerations.¹¹⁷ Procedures must be put in place to assess and verify the impact of activities following the Comprehensive Evaluation, including the monitoring of key environmental indicators.¹¹⁸

1992 Biodiversity Convention

The 1992 Biodiversity Convention requires parties to identify 'processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques', and to require environmental impact assessment of proposed projects that are likely to have 'significant adverse effects on biological diversity'.¹¹⁹ Article 14 also requires parties to promote notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to affect significantly and adversely the biological diversity of other states or areas beyond the limits of national jurisdiction, and to provide for immediate notification in any case of imminent or grave danger or damage.¹²⁰ The eighth Conference of the Parties endorsed draft guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and processes, and in strategic environmental assessment, and urged parties and other governments and organisations to apply the guidelines in the context of their implementation of Article 14(1) of the Convention.¹²¹ The Guidelines provide considerable detail as to the content of an environmental impact assessment (following the approach set forth in other international instruments), and the conditions under which assessments must and should be carried out.

Risk Assessment Procedures

Risk assessment requirements are an increasingly common feature of international law addressing risks to human health and the environment. The genesis of this trend lies in international trade law and the adoption in 1995 of the WTO Agreement on Sanitary and Phytosanitary Measures (SPS Agreement).¹²² This Agreement applies to trade-restrictive measures adopted by member states for the purposes of protecting human, animal and plant life or health from the effects of introduced diseases, pests or contaminants in foodstuffs. The SPS Agreement imposes novel requirements for such measures to be based on scientific principles and risk assessment.¹²³ Following the conclusion of the SPS Agreement, risk assessment requirements have been

¹¹⁷ Art. 4. ¹¹⁸ Annex I, Art. 5.

¹¹⁹ Arts. 7(c) and 14(1)(a). These requirements are supplemented by decisions of the Conference of the Parties, including: Decision IV/10 (calling on parties to submit to the secretariat impact assessments, reports on the effectiveness of EIAs, reports relating to national legislation on EIAs, and incentive schemes to encourage participation in EIA programmes); Decision V/18 (calling on parties, inter alia, to 'integrate environmental impact assessment into the work programs' in all areas of biological diversity; to use the loss of biological diversity as a factor in determining impact when conducting an EIA; to ensure wide involvement of all impacted when conducting an EIA; to look at the cumulative impact of multiple projects; and to report on national practices and experiences with EIAs); and Decision VIII/28 (endorsing guidelines for biodiversity-inclusive environmental impact and strategic environmental assessment contained in the Annex to the Decision).

¹²⁰ Art. 14(1)(c) and (d).

¹²¹ Decision VIII/28 (voluntary guidelines for biodiversity-inclusive impact assessment) (2006).

¹²² Chapter 18, pp. 871–2. ¹²³ Arts. 2.2 and 5.1.

adopted in a number of multilateral environmental agreements where there is the potential for overlap between the requirements of international environmental law and trade law.¹²⁴ These treaties include the 1998 Chemicals Convention,¹²⁵ the 2001 POPs Convention¹²⁶ and the 2000 Biosafety Protocol to the Convention on Biological Diversity.¹²⁷

The risk assessment requirements of the Biosafety Protocol are illustrative of the penetration of notions of ‘risk assessment’ – more commonly associated with the public health and engineering fields – into more conventional environmental areas. The Protocol requires risk assessments to be carried out in respect of import decisions relating to living modified organisms, in order

to identify and evaluate the possible adverse effects of living modified organisms on the conservation and sustainable use of biological diversity, taking also into account risks to human health.¹²⁸

The risk assessments are to be carried out in a ‘scientifically sound manner, in accordance with Annex III and taking into account recognized risk assessment techniques’, and may be carried out by the exporter.¹²⁹ In addition, the Protocol requires parties to maintain appropriate risk management measures, ‘based on risk assessment’ and imposed only to the extent ‘necessary’ to prevent adverse effects on biodiversity, also taking into account human health risks.¹³⁰ Annex III identifies the methodology to be applied in carrying out a risk assessment, including:

- (a) An identification of any novel genotypic and phenotypic characteristics associated with the living modified organism that may have adverse effects on biological diversity in the likely potential receiving environment, taking also into account risks to human health;
- (b) An evaluation of the likelihood of these adverse effects being realized;
- (c) An evaluation of the consequences should these adverse effects be realized;
- (d) An estimation of the overall risk posed by the living modified organism based on the evaluation of the likelihood and consequences of the identified adverse effects being realized;
- (e) A recommendation as to whether or not the risks are acceptable or manageable; and
- (f) Where there is uncertainty regarding the level of risk, it may be addressed by requesting further information on the specific issues of concern or by implementing appropriate risk management strategies and/or monitoring the living modified organism in the receiving environment.¹³¹

Although the Protocol recognises a role for the precautionary principle in the process of biosafety risk assessment, the mode of assessment differs markedly from conventional environmental impact assessment given the emphasis placed on scientific evidence and the requirement

¹²⁴ See also the 2015 Paris Agreement provisions on loss and damage which encourage cooperation and facilitative efforts regarding ‘comprehensive risk assessment and management’ and ‘risk insurance facilities’ (Art. 8(4)(e) and (f)).

¹²⁵ Chapter 12, pp. 587–9. ¹²⁶ *Ibid.*, pp. 581–3. ¹²⁷ Chapter 10, pp. 397–403.

¹²⁸ Biosafety Protocol, Art. 15(1). ¹²⁹ Art. 15(2). ¹³⁰ Art. 16.2.

¹³¹ Annex III, para. 8. ‘Risk assessment’ is to take into account the relevant technical and scientific details regarding the characteristics of: recipient organism or parental organisms; donor organism or organisms; vector; insert or inserts and/or characteristics of modification; detection and identification of the living modified organism; information relating to the intended use; and the receiving environment.

for an evaluation of risk defined in technical terms as the product of the likelihood and consequences of identified adverse effects being realised.

WORLD BANK AND OTHER MULTILATERAL LENDING INSTITUTIONS

Many international organisations, including multilateral development banks, have developed their own environmental impact assessment procedures,¹³² of which the most widely studied is that adopted by the World Bank in 1989.¹³³ World Bank Operational Directive 4.01 was adopted in 1989, its objective being to ensure that the development options adopted were sound and enduring from an environmental perspective and that environmental consequences were recognised at an early stage in the project cycle and included in the project scheme.¹³⁴ The Operational Directive was the subject of significant criticism, including the failure to provide for a 'no-action alternative' whereby the project may be stopped because the environmental risks are too great to allow the project to proceed at all, and its silence as to mandatory requirements concerning the provision of information to local populations and their right to participate in the environmental impact assessment process. In 1999, the policy was converted into a new format, now reflected in Operational Policy (OP) 4.01 and Bank Procedures (BP) 4.01, which have sought to address these and other issues.

Under OP 4.01, the World Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, thereby improving decision-making.¹³⁵ EA is described as a process, which: evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design and implementation; and includes the process of mitigating and managing adverse environmental impacts throughout the implementation of the project. It is premised on the Bank's preference for 'preventive measures over mitigatory or compensatory measures, whenever feasible'.¹³⁶ The borrower is responsible for carrying out the EA, which may comprise one or more of an environmental impact assessment (EIA), a regional or sectoral EA, an environmental audit, a hazard or risk assessment, and an environmental management plan (EMP).¹³⁷ The Bank is responsible for environmental screening of each proposed project to determine the appropriate extent and type of EA, and classifies the proposed project into one of four categories. A proposed project is classified as

¹³² Guidelines on environmental assessment of overseas development assistance have also been developed by the OECD. See e.g. Recommendation on Environmental Assessment of Development Assistance Projects and Programmes, C(85) 104 (1985) and DAC guidelines on Applying Strategic Environmental Assessment: Good Practice Guidance for Development Cooperation (2006).

¹³³ See also International Finance Corporation, OP 4.01; European Bank for Reconstruction and Development, Procedures for Environmental and Social Appraisal and Monitoring of Investment Projects (2015); African Development Bank, Environmental and Social Assessment Procedures for AfDB Public Sector Operations (2001); Asian Development Bank, Environmental Assessment Guidelines (2003); North American Development Bank, 1993 Agreement, 32 ILM 1545 (1993), Art. II(3)(c), www.nadbank.org, and Border Environment Cooperation Commission Guidelines (in particular Art. VII), 21 September 1995, 60 US Fed. Reg. 48982. In relation to regional development banks and EIA, see M. Somarajah, 'Foreign Investment and International Environmental Law', in Sun Lin and Lal Kurukulasuriya (eds.), *UNEP's New Way Forward: Environmental Law and Sustainable Development* (Nairobi: UNEP, 1995), 283, 288.

¹³⁴ Operational Directive 4.00, Annex A, Environmental Assessment (1989).

¹³⁵ See OP 4.01, Annex A (definitions). The Bank's internal procedures are governed by BP 4.01. ¹³⁶ Para. 2.

¹³⁷ OP 4.01, Annex C, describes the environmental management plan.

Category A if it is 'likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented', and will normally require an EIA (or a comprehensive regional or sectoral EA).¹³⁸ A proposed project is classified as Category B if its potential adverse environmental impacts are site-specific, if few of the impacts are irreversible, and if mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project will be narrower than for a Category A project. A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in sub-projects that may result in adverse environmental impacts. Environmental assessments are also required for special project types. Category A and B projects must be subject to public consultation.

The adequacy of the application of OP 4.01 is reflected in the fact that thirteen of the twenty-three requests filed at the World Bank Inspection Panel by July 2001 alleged inadequate environmental assessments. In some cases, the Panel found no violations, but in others the Panel found violations which led or contributed to a decision to withdraw financing,¹³⁹ or other proposed remedial actions.¹⁴⁰ This general trend has continued, with policy issues relating to environmental assessment representing the second most frequent basis of requests made to the Panel as of 30 June 2009.¹⁴¹

INTERNATIONAL CASES

The developments described in this chapter, which largely took place in the late 1980s and during the 1990s, provided the background against which international courts and tribunals increasingly addressed the requirement to carry out an environmental impact assessment. Beyond the increasing case law of the European Court of Human Rights and the Inter-American Court of Human Rights recognising the relationship between human rights protection and the performance of environmental impact assessments,¹⁴² the adequacy of EIA has been assessed by a range of international courts and tribunals, including a succession of cases before the ICJ.

A central part of Hungary's case in the *Gabčíkovo–Nagymaros* case was that the two parties to the 1977 Treaty had failed, by 1989, to assess adequately the project's impact on the environment, in particular the impacts on freshwaters and biodiversity.¹⁴³ The ICJ considered that Hungary was not entitled (in 1989) to suspend construction on its part of the project, or (in 1992) to terminate the 1977 Treaty, and that the 1977 Treaty therefore remained in force between the parties. However, the Court recognised that the project's impact upon, and its implications

¹³⁸ OP 4.01, Annex B, describes the content of a Category A environmental assessment report (to include: executive summary; policy, legal and administrative framework; project description; baseline data; environmental impacts; analysis of alternatives; and environmental management plan (EMP)).

¹³⁹ *Nepal/Arum III* (25 October 1994); *China/Western Poverty Reduction Project* (18 June 1999); see generally Chapter 5, pp. 176–7.

¹⁴⁰ *Ecuador/Mining Development and Environmental Control Technical Assistance* (7 May 2000).

¹⁴¹ World Bank Inspection Panel, *The Inspection Panel at 15 Years* (2009), Appendix V, Figure V-A, 200. See also World Bank Inspection Panel Annual Report, 2014–15, Appendix II.

¹⁴² At the European Court of Human Rights, see e.g. *Taşkın and Others v. Turkey*, para. 118; *Öçkan and Others v. Turkey*, Judgment of 28 March 2006, para. 43; and *Brânduse v. Romania*, Judgment of 7 April 2009, para. 63; at the Inter-American Court of Human Rights, see *San Mateo de Huanchor v. Peru*; see Chapter 17, pp. 823–4.

¹⁴³ (1997) ICJ Reports 7, at para. 35; see Chapter 9, pp. 345–51.

for, the environment were a key issue, and that the impact and implications were considerable, and ruled that Articles 15 and 19 of the 1977 Treaty prescribed 'a continuing – and thus necessarily evolving – obligation on the parties to maintain the quality of the water of the Danube and to protect nature'.¹⁴⁴ Noting that 'vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage', the Court ruled that:

the Parties together should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river.

In effect, the Court read into the two provisions of the 1977 Treaty a requirement that the parties carry out a continuing environmental assessment of the project's impacts on the environment. The rationale behind the Court's approach was reflected in the Separate Opinion of Judge Weeramantry, who was in the majority and a member of the Court's drafting committee. Developing his Opinion in the 1995 New Zealand nuclear tests case, Judge Weeramantry stated:

In the present case, the incorporation of environmental considerations into the Treaty by Articles 15 and 19 meant that the principle of EIA was also built into the Treaty. These provisions were clearly not restricted to EIA before the project commenced, but also included the concept of monitoring during the continuance of the project . . . Environmental law in its current state of development would read into treaties which may reasonably be considered to have a significant impact upon the environment, a duty of environmental impact assessment and this means also, whether the treaty expressly so provides or not, a duty of monitoring the environmental impacts of any substantial project during the operation of the scheme.¹⁴⁵

Moreover, according to Judge Weeramantry, the 'principle of contemporaneity' in the application of environmental norms supplemented his observations regarding continuing assessment and provided the standard by which the continuing assessment is to be made:

It matters little that an undertaking has been commenced under a treaty of 1950, if in fact that undertaking continues in operation in the year 2000. The relevant environmental standards that will be applicable will be those of the year 2000.¹⁴⁶

Judge Weeramantry's approach was taken up by the ICJ in the *Pulp Mills* case, a dispute in which Argentina and Uruguay agreed on the need to carry out an environmental impact assessment.¹⁴⁷ The Court ruled that it was inherent in the obligation to protect and preserve

¹⁴⁴ Para. 140. Art. 15 specified that the contracting parties 'shall ensure, by the means specified in the joint contractual plan, that the quality of the water in the Danube is not impaired as a result of the construction and operation of the System of Locks'; Art. 19 provided that: 'The Contracting Parties shall, through the means specified in the joint contractual plan, ensure compliance with the obligations for the protection of nature arising in connection with the construction and operation of the System of Locks.'

¹⁴⁵ (1997) ICJ Reports 7 at 111. ¹⁴⁶ *Ibid.*, 114. ¹⁴⁷ (2010) ICJ Reports, at para. 203.

the aquatic environment of the Uruguay River that they should 'carry out an environmental impact assessment . . . with respect to activities which may be liable to cause transboundary harm'.¹⁴⁸ Having regard to the practice that in recent years had gained widespread acceptance among states, the Court concluded that:

it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works.¹⁴⁹

The Court then considered what that requirement entailed in practice. It noted that the 1975 Uruguay River Statute was silent on the matter, and that general international law did not 'specify the scope and content of an environmental impact assessment'. Argentina and Uruguay were not parties to the Espoo Convention, and the 1978 UNEP Goals and Principles were only guidelines and not binding.¹⁵⁰ The Court stated that the Guidelines provided 'only that the "environmental effects in an EIA should be assessed with a degree of detail commensurate with their likely environmental significance" (Principle 5) without giving any indication of minimum core components of the assessment', but did not engage in any effort to ascertain the minimum content of environmental impact assessments that are readily identifiable in the great volume of international and national practice that has followed the adoption of the 1978 UNEP Guidelines, as noted in the earlier parts of this chapter. The Court concluded that:

it is for each State to determine in its domestic legislation or in the authorization process for the project, the specific content of the environmental impact assessment required in each case, having regard to the nature and magnitude of the proposed development and its likely adverse impact on the environment as well as to the need to exercise due diligence in conducting such an assessment.¹⁵¹

The guidance given by the Court to states is limited, to the effect that the assessment 'must be conducted prior to the implementation of a project' and as necessary after operations have started, and throughout the life of the project there should be 'continuous monitoring of [the project's] effects on the environment shall be undertaken'.¹⁵² On the facts, the Court rejected Argentina's claim that Uruguay failed properly to assess possible alternative sites before determination of the final site, or that the location of the plant had failed to take into account the capacity of the waters of the river to receive, dilute and disperse discharges of effluent, or that affected populations had been inadequately consulted.¹⁵³ While the judgment may be welcome

¹⁴⁸ *Ibid.*, para. 204. ¹⁴⁹ *Ibid.* ¹⁵⁰ *Ibid.*, para. 205. ¹⁵¹ *Ibid.*

¹⁵² *Ibid.* The Court also indicated that, under the 1975 River Uruguay Statute (rather than general international law), the assessment should be notified to the other state party, to enable it 'to participate in the process of ensuring that the assessment is complete, so that it can then consider the plan and its effects with a full knowledge of the facts' (*ibid.*, paras. 119–20).

¹⁵³ *Ibid.*, paras. 207–19.

in recognising an obligation under customary international law to carry out a prior environmental assessment, it has fallen short in determining that each state need do no more than determine in its domestic legislation or in the authorisation process for the project what the content of the assessment should be, suggesting that there is no requirement in general international law as to content and process, and missing a vital opportunity to clarify what the minimum requirements of such an assessment should be. By leaving it to each state to determine the specific content, without referring even to the matters that should at a minimum be addressed, the Court is likely to face criticism for recognising a customary norm that appears, on one possible reading, to have no real substantive content. On another reading, it may be that this was not what the Court intended, so that one might read into the parsimonious words the bare elements of what any state might be required to do when it engages in an activity that gives rise to a risk of a significant adverse impact in a transboundary context. If so, it would have been helpful for the Court to state its views with greater clarity, and in so doing provide states with some of the certainty and predictability that any legal order requires.

While the *Costa Rica v. Nicaragua* cases decided by the ICJ in 2015 arguably presented the Court with another opportunity to clarify international legal requirements for environmental impact assessment, the findings merely echo those in *Pulp Mills*.¹⁵⁴ The Court noted that although its ruling in *Pulp Mills* particularly concerned industrial activities, the underlying principle requiring EIA ‘applies generally to proposed activities which may have a significant adverse impact in a transboundary context.’ It went on:

to fulfil its obligation to exercise due diligence in preventing significant transboundary environmental harm, a State must, before embarking on an activity having the potential adversely to affect the environment of another State, ascertain if there is a risk of significant transboundary harm, which would trigger the requirement to carry out an environmental impact assessment. Determination of the content of the environmental impact assessment should be made in light of the specific circumstances of each case . . . If the environmental impact assessment confirms that there is a risk of significant transboundary harm, the State planning to undertake the activity is required, in conformity with its due diligence obligation, to notify and consult in good faith with the potentially affected State, where that is necessary to determine the appropriate measures to prevent or mitigate that risk.¹⁵⁵

The ICJ’s approach stands in sharp contrast with that of the ITLOS Seabed Disputes Chamber, which, shortly after the *Pulp Mills* decision, addressed the obligation to conduct an environmental impact assessment in relation to activities in the Area, as required by Section 1(7) of the Annex to the 1994 Agreement.¹⁵⁶ The Chamber confirmed that the sponsoring state ‘is under a due diligence obligation to ensure compliance by the sponsored contractor with this obligation’. The Chamber went further, affirming that the obligation to conduct an environmental impact assessment is ‘a general obligation under customary international law’. As regards the ICJ’s view

¹⁵⁴ For a discussion of the issues in the case, see Chapter 9, pp. 359–60.

¹⁵⁵ *Costa Rica v. Nicaragua* cases, Judgment 16 December 2015, available at www.icj-cij.org/docket/files/152/18848.pdf, para. 104.

¹⁵⁶ *Responsibilities and Obligations in the Area*, Advisory Opinion, paras. 141–50 (Section 1(7) provides: ‘An application for approval of a plan of work shall be accompanied by an assessment of the potential environmental impacts of the proposed activities’).

that general international law does not 'specify the scope and content of an environmental impact assessment', the Chamber noted that the indications in the Nodules Regulations (2000) and the Sulphides Regulations (2010), and in Recommendations for the Assessment of Possible Environmental Impacts (2002), added 'precision and specificity to the obligation as it applies in the context of activities in the Area'.¹⁵⁷

Most recently, the Annex VII arbitral tribunal in the *South China Sea* case shed some light on questions regarding the adequacy of EIA under international law. Although China's rejection of the arbitration and failure to provide the tribunal with any EIA it had undertaken for its reef-building activities limited the tribunal's capacity to make definitive rulings, its analysis suggested some minimum standards for EIA. In particular, the State Oceanic Administration's statement and report regarding the construction provided only very general information on the activities and the ocean environment and were regarded by the tribunal as falling short of the criteria for environmental assessment specified by China's own domestic EIA law.¹⁵⁸

CONCLUSIONS

The clear trend of the international case law considering projects and activities with transboundary environmental impacts indicates the extent to which the concept of environmental assessment has developed and become established since the first edition of this book.¹⁵⁹ A broad range of international instruments now establishes general obligations requiring prior environmental assessment of projects which may cause environmental harm; a smaller number set forth more detailed criteria for the conduct of such assessments, whether in particular geographic areas, to protect particular resources, or in respect of particular categories of activities. Moreover, an obligation to carry out prior assessment of certain projects now exists in customary law, even if the scope of any assessment remains to be finally determined.

In addition, most multilateral development banks now require some form of environmental impact assessment, and are required by international law also to assess the environmental consequences of potentially damaging projects into which they consider putting financial resources.

As the limitations of the first generation of project-related environmental impact assessments have become apparent, a second generation of instruments revising earlier approaches and establishing strategic environmental assessments of programmes and plans has emerged. The elaboration of requirements for risk assessment in a number of international environmental treaties takes the law in a different direction; one that emphasises probabilistic notions of risk and science-based procedures for their assessment. In this regard, it is noteworthy that the formulation of EIA requirements adopted in recent ICJ decisions is one based on 'a risk of significant transboundary harm' as the trigger for assessment.

In respect of projects, the critical issues remain: the scope of the impacts to be assessed; the type of projects to be covered; the availability of information to the public and their participation

¹⁵⁷ *Ibid.*, para. 149 (see Recommendations for the Guidance of the Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area, ISBA/7/LTC/1/Rev.1, 13 February 2002).

¹⁵⁸ Para. 990.

¹⁵⁹ See also e.g. *Maffezini v. Spain*, ICSID Award of 9 November 2000, para. 67, 16 *ICSID Rev-FILJ* 248 (2001).

in the process; capacity for post-development monitoring of impacts and project modification; and the requirement that the statement be taken into account *before* authorisation is granted. The ICJ's statement in the *Pulp Mills* case regarding the necessity of prior environmental impact assessment for projects with a risk of transboundary harm is welcome but will have little practical effect unless courts and tribunals are also prepared to identify with more specificity the conditions that states must follow, and the consequences of a failure to meet them. What continues to be needed, as a matter of urgency, are generally acceptable international guidelines that specify the content of any assessment that is to be carried out in advance of a project that might cause significant transboundary effects.

The unwillingness of states to subject themselves to what they consider to be unnecessary and intrusive environmental assessments also remains a problem, as illustrated by the differences between the United Kingdom and Ireland over the need to carry out an assessment on a nuclear reprocessing plant which led to the adoption of a Recommendation on the matter by PARCOM in June 1993,¹⁶⁰ and a similar dispute in 2001 concerning the quality of the assessment of the MOX plant. Emerging instruments concerning strategic environmental impact assessment may help to address these problems by requiring states to consider potential environmental impacts much earlier in the process of planning for large infrastructure and other development facilities. Nonetheless, far-reaching legal commitments must be matched by strong national implementation if strategic environmental assessment and associated project-level environmental impact assessment are to realise their stated goals of sustainable development and prevention of transboundary environmental harm.

FURTHER READING

General resources on EIA requirements in international environmental law:

- P. Okowa, 'Procedural Obligations in International Environmental Agreements', 67 *British Year Book of International Law* 275 (1996);
- UNEP, *Environmental Impact Assessment: Issues, Trends and Practise* (UNEP, 1996);
- J. Ebbeson, 'Innovative Elements and Expected Effectiveness of the 1991 EIA Convention', 19 *Environmental Impact Assessment Review* 47 (1999);
- K. Gray, 'International Environmental Impact Assessment: Potential for a Multilateral Environmental Agreement', 11 *Colorado Journal of Environmental Law and Policy* 83 (2000);
- J. Knox, 'The Myth and Reality of Transboundary Environmental Impact Assessment', 96 *American Journal of International Law* 291 (2002);
- H. Abaza et al., *Environmental Impact Assessment and Strategic Environmental Assessment: An Integrated Approach* (UNEP, 2004);
- K. Bastmeijer and T. Koivurova (eds.), *Theory and Practice of Transboundary Environmental Impact Assessment* (Leiden: Martinus Nijhoff, 2008);
- N. Craik, *The International Law of Environmental Impact Assessment: Process, Substance and Integration* (Cambridge: Cambridge University Press, 2008);
- J. Glasson, A. Chadwick and R. Therivel, *Introduction to Environmental Impact Assessment* (Abingdon, UK: Routledge, 2012, 4th edn).

¹⁶⁰ See Chapter 6, pp. 216–17.

15

Environmental Information and Technology Transfer

CHAPTER OUTLINE

This chapter deals with two categories of implementation techniques that are recognised as central to achievement of the goals of international environmental law:

1. dissemination of environmental information; and
2. transfer of technical know-how and technologies for reducing environmental harm.

The chapter provides an analysis of leading examples of these techniques drawn from treaty instruments and state practice. It also highlights barriers to dissemination arising particularly as a result of commercial confidentiality requirements and intellectual property rights.

INTRODUCTION

Improving the dissemination of scientific and technological knowledge, whether in the form of information on the environment or technical know-how on the best ways to deal with environmental problems, is a well-established objective of international environmental law. Information, including scientific expertise, is widely recognised as a prerequisite to effective national and international environmental management, protection and cooperation.¹ The availability of, and access to, information allows preventative and mitigation measures to be taken, ensures the participation of citizens in national decision-making processes, and can influence individual, consumer and corporate behaviour. Information also allows the international community to determine whether states are complying with their legal obligations.² Technical assistance, provided especially to developing countries, and wider dissemination of state-of-the-art

¹ On early practice, including at the national level, see OECD (Environment Committee), 'Application of Information and Consultation Practices for Preventing Transfrontier Pollution', in OECD, *Transfrontier Pollution and the Role of States* (1981); M. Baram, 'Risk Communication Law and Implementation Issues in the US and EC', 6 *Boston University International Law Journal* 21 (1988); M. Padgett, 'Environmental Health and Safety - International Standardisation of Right-to-Know Legislation in Response to Refusal of United States Multinationals to Publish Toxic Emissions Data for Their United Kingdom Facilities', 22 *Georgia Journal of International and Comparative Law* 701 (1992). See also J. Ebbesson and P. Okowa (eds.), *Environmental Law and Justice in Context* (Cambridge: Cambridge University Press, 2009).

² These themes were picked up by the International Court of Justice in the *Pulp Mills* case, as noted below.

technologies, including ‘clean technologies’, are likewise seen as central to international environmental law implementation efforts.

This chapter considers international rules regarding the dissemination of environmental information and clean technologies. The period since the first edition of this book has seen many significant developments in both areas, reflecting the increasing emphasis on effective implementation of international environmental obligations. In the field of environmental information these include the 1998 Aarhus Convention, which establishes a Europe-wide regime for access to environmental information, public participation, and access to justice in environmental cases; the Aarhus Convention’s 2003 Protocol on Pollutant Release and Transfer Registers; and several other agreements such as the 1998 Chemicals Convention, the 2000 Biosafety Protocol, the 2001 POPs Convention, the 2010 Nagoya Protocol and the 2015 Paris Agreement, which include prominent commitments to ensuring appropriate flows of information and the dissemination of scientific information and expertise. Arbitral tribunals, including those in the trade field, have also demonstrated an increasing acceptance of the importance of transparency and the public availability of information, with a trend to greater transparency for proceedings concerning international environmental matters.³

Over the same period, provisions regarding technical assistance and technology transfer have also become a standard feature of international environmental agreements, with growing acceptance of the linkage – first articulated in treaties such as the 1992 Biodiversity and Climate Change Conventions – between the implementation by developing country parties of their treaty commitments and the transfer of technology and know-how from developed country parties in fulfilment of their treaty obligations. The 2015 Paris Agreement, for example, establishes a new ‘technology framework’ that will provide guidance to the work of the Convention’s Technology Mechanism, with the aim of ‘strengthen[ing] cooperative action on technology development and transfer’, and requiring the provision of support to developing countries for implementation of such activities.⁴ Even so, significant barriers to full implementation of relevant treaty requirements for technology transfer and support remain, including the application of intellectual property rights that may restrict dissemination of environmentally sound technologies.

ENVIRONMENTAL INFORMATION

Legal obligations regarding environmental information developed with early treaty provisions requiring parties to provide information to the depository, or to other parties, on measures to implement commitments. Since then, environmental information has gradually emerged as a central issue of international environmental law. Principle 2 of the 1972 Stockholm Declaration called for the ‘free flow of up-to-date scientific information and transfer of experience’. The 1982 World Charter for Nature broadened the scope and extent of obligations relating to information, calling for the dissemination of knowledge of research, the monitoring of natural processes and ecosystems, and the participation of all persons in the formulation of decisions of

³ As has occurred in a number of cases beginning with the UNCLOS Annex VII arbitral tribunal proceedings in the *Southern Bluefin Tuna* cases (1999) (see Chapter 11, pp. 528ff.) and the OSPAR *MOX* case (2003) (see pp. 709–10). In the WTO dispute settlement system, a number of cases involving health/quarantine issues have also featured publicly accessible hearings (see L. Ehring, ‘Public Access to Dispute Settlement Hearings in the World Trade Organization’, 11(4) *Journal of International Economic Law* 1021 (2008)).

⁴ Paris Agreement, Art. 10(3) and (6).

direct concern to the environment.⁵ During the 1980s, a number of treaties emerged addressing public education, information exchange and consultation. The Seveso accident in 1982 and the Chernobyl accident in 1986 focused attention on the need to improve the provision of information in emergency situations and, towards the end of the 1980s, eco-labelling and corporate environmental auditing and accounting had become issues addressed by law at the international level.

By the time of UNCED in 1992, numerous treaties and other international instruments included substantive obligations relating to information: particularly noteworthy are the 1986 IAEA Notification Convention, the 1989 Basel Convention and the 1992 Industrial Accidents Convention. Notably, no fewer than four of the Rio Declaration's twenty-seven Principles concern the provision of, and access to, environmental information. The Rio Declaration calls for: exchanges of scientific and technological knowledge; individual access to environmental information; public awareness and participation; notification of emergencies; and prior and timely notification of certain potentially hazardous activities.⁶ Chapter 40 of Agenda 21, entitled 'Information for Decision-Making', recognised that the need for information arises at all levels, from senior decision-makers at the international level to the grass-roots and individual levels, and to that end called for the development of two programme areas: to bridge the 'data gap' and to improve information availability.⁷ Scientific information was the subject of a separate chapter in Agenda 21, which emphasised the 'role of the sciences . . . to provide information to better enable formulation and selection of environment and development policies in the decision-making process'.⁸ Based on the requirements outlined in Agenda 21, the UNEP Legal Experts Group has an ongoing programme area concerned with promoting public awareness, education, information and public participation, including the development of national rules, laws and standards.⁹

Following UNCED there have been numerous significant developments in the field of environmental information that consolidate and, in some respects, develop existing techniques for ensuring that states, other members of the international community and, increasingly, the general public are provided with information on the risks associated with, and the environmental consequences of, certain activities. A detailed consideration of relevant international instruments identifies at least ten separate but related techniques concerning the provision and dissemination of information. Environmental impact assessment, addressed in the previous chapter, is one such important technique for acquiring environmental information. Other techniques relate to:

- (1) information exchange;
- (2) reporting and the provision of information;
- (3) consultation;
- (4) notification of emergency situations;
- (5) monitoring and surveillance (including the operation of expert advisory bodies);

⁵ A/RES/37/7 paras. 15, 18, 19 and 23. ⁶ Principles 9, 10, 18 and 19. ⁷ Agenda 21, para. 40.1.

⁸ Agenda 21, para. 35.2.

⁹ See Programme for the Development and Periodic Review of Environmental Law for the First Decade of the Twenty-First Century (2008), Part G (public participation and access to information), UNEP/Env.Law/MTV4/IG/2/2 (22 October 2008) (Montevideo Programme IV).

- (6) public right of access to environmental information and participation in environmental decision-making;
- (7) public education and awareness;
- (8) eco-labelling; and
- (9) eco-auditing and accounting.

The examples cited in the following sections are intended to be illustrative rather than exhaustive, given the large number of instruments and examples of state practice relating to informational matters. The overlap between the obligations relating to information exchange, consultation, reporting and notification is often evident, and it is important to bear in mind that these different areas are interrelated, as reflected in many recent international environmental agreements. In addition to the multilateral instruments that are cited, there are many others that are not mentioned as well as literally hundreds, if not thousands, of bilateral instruments that also contribute significantly to the law in this area. In this regard, the International Law Commission's 2001 draft Articles on the Prevention of Transboundary Harm that adopt, as a central element, requirements relating to information, may be seen as 'codifying' general practice, in particular as reflected in treaty requirements.¹⁰

Information Exchange

The general obligation to exchange information is found, in one form or another, in virtually every international environmental agreement. 'Information exchange' can be characterised as a general obligation of one state to provide general information on one or more matters on an ad hoc basis to another state, especially in relation to scientific and technical information. 'Information exchange' may be distinguished from specific obligations to provide regular or periodic information on specified matters to a specified body (reporting) or to provide detailed information on the occurrence of a particular event or set of events, such as an accident or emergency or proposed activity (notification). 'Information exchange' of a general nature was endorsed by Principle 20 of the Stockholm Declaration and by Principle 9 of the Rio Declaration, which supported exchanges of scientific and technical knowledge as a means of strengthening 'endogenous capacity-building for sustainable development by improving scientific understanding'. Other relevant texts include: Principle 7 of the 1978 UNEP draft Principles of Conduct, which called for the exchange of information based upon the principle of cooperation and the spirit of good-neighbourliness; Article 5 of the 1986 Legal Principles of the WCED Legal Experts Group, which supported the exchange of information between states upon request, and in a timely manner, concerning transboundary natural resources; Article 12 of the ILC's draft Articles on Prevention of Transboundary Harm; and various provisions of the WSSD Plan of Implementation.¹¹

¹⁰ ILC report, A/56/10 (2001), Draft Articles on Prevention of Transboundary Harm from Hazardous Activities. See particularly Arts. 8-10, dealing with notification and consultation where risk assessment indicates a risk of causing significant transboundary harm; Art. 10, on states' obligations to seek solutions based on an equitable balance of interests; and Arts. 11-13, that provide for procedures in the event that there is no notification, require the exchange of timely information while the activity is being carried out, and call for information to be provided to the public likely to be affected by that activity, and to ascertain their views.

¹¹ Supporting information exchange or scientific cooperation on, inter alia, clean technologies (para. 15(c)), freshwater and marine resource management (paras. 27, 32(a) and 34(a)), climate change (para. 36(d)) and biotechnology and biosafety (para. 42(q)).

Under environmental treaties, the obligation to exchange information can be a requirement between states, between states and international organisations, and between international organisations and non-state actors. By way of an early example, the 1949 Inter-American Tropical Tuna Commission was granted the power to request information from 'official agencies of the contracting parties, and any international, public, or private institution or organisation, or any private individual'.¹² Many other international organisations are required to facilitate and encourage the exchange of information, a function which dates back to some of the earliest international environmental agreements. The 1933 London Fauna and Flora Convention required information exchange on the adoption of certain implementation measures, including import and export.¹³ The 1940 Western Hemisphere Convention requires parties to 'make available to all the American Republics equally through publication or otherwise the scientific knowledge resulting from ... co-operative effort'.¹⁴

Information exchange can be required in respect of general and undefined matters or in relation to specific matters. Examples of the former include the obligation to exchange information on: general scientific, research and technical matters; helping 'align or co-ordinate' national policies;¹⁵ research results and plans for science programmes;¹⁶ environmental effects;¹⁷ appropriate technologies;¹⁸ relevant national records;¹⁹ national legislation;²⁰ implementation;²¹ relevant national authorities and bodies; and even the availability of professors and teachers.²² Examples of more specific requirements include information exchange on: aspects of pest and plant diseases;²³ catches and migratory movements of fish;²⁴ fishery resources,²⁵ including tuna fisheries;²⁶ pollution from land-based sources;²⁷ transboundary air pollution;²⁸ the conservation of species of wild flora and fauna;²⁹ archaeological excavations and discoveries;³⁰ cultural heritage;³¹ environmental modification techniques for peaceful purposes;³² the protection of nuclear material;³³ certain environmentally harmful activities;³⁴ forest

¹² 1949 Inter-American Tropical Tuna Convention, Art. I(16). See now the 2003 Antigua Convention, in force 27 August 2010, replacing the 1949 Convention, Art. VIII(2).

¹³ Arts. 8(6), 9 and 12(1). For the current provisions now found in the 2003 Revised African Nature Convention, see Arts. XXVI(5)(e) and XXIX.

¹⁴ Art. VI. ¹⁵ 1982 Benelux Conservation Convention, Art. 2(2).

¹⁶ 1959 Antarctic Treaty, Art. III(1)(a) and (c); 1973 Polar Bears Agreement, Art. VII.

¹⁷ 2003 Revised African Nature Convention, Art. XXII(2)(b).

¹⁸ 1988 NO_x Protocol, Art. 3(1); under Agenda 21, UNEP was directed to facilitate 'information exchange on environmentally sound technologies, including legal aspects' (para. 38.22(j)).

¹⁹ 1952 North Pacific Fisheries Convention, Art. VIII. ²⁰ 2003 Revised African Nature Convention, Art. XXIX(2)(a).

²¹ 1958 Danube Convention, Art. 12(3); 1983 Cartagena Oil Spills Protocol, Art. 4; 2009 Black Sea LBSA Protocol, Art. 11(1)(e).

²² 1959 Plant Protection Agreement, Art. IV(3). ²³ 1951 European Plant Protection Convention, Art. V(a)(5).

²⁴ 1958 Danube Convention, Art. 8. ²⁵ 2009 South Pacific Fishery Resources Convention, Art. 23.

²⁶ 1966 Atlantic Tuna Convention, Art. IV(2)(d).

²⁷ 1983 Quito LBS Protocol, Art. IX(d); 2009 Black Sea LBSA Protocol, Arts. 4(2)(e), 11(2), 13 and 19(1)(e); 2010 Nairobi LBSA Protocol, Arts. 10(1), 12(2), 14(1)(a), 16 and 17(f)(iii).

²⁸ 2006 Central Asia Framework Convention, Art. 8(3)(b).

²⁹ 1979 Bern Convention, Art. 3(3); 2007 Gorilla Conservation Agreement, Art. III(2)(o).

³⁰ 1969 European Archaeological Heritage Convention, Arts. 7 and 8.

³¹ 2005 European Cultural Heritage Framework Convention, Arts. 15(b) and 16(b).

³² 1977 ENMOD Convention, Art. III(2).

³³ 1980 Convention on the Physical Protection of Nuclear Material, Art. 5; Art. 6 provides for the protection of confidentiality of material so exchanged. See also 2003 Russian MNEP Framework Agreement, Art. 4(1).

³⁴ 1974 Nordic Environmental Protection Convention, Art. 5.

management, research and development;³⁵ international trade in tropical timber;³⁶ the marine environment;³⁷ the protection and management of regional seas;³⁸ integrated coastal zone management;³⁹ the recycling of ships;⁴⁰ and the conservation and sustainable use of biological diversity.⁴¹

Several conventions establish more detailed rules on the type of information to be exchanged. The 1982 UNCLOS requires the exchange of scientific information and other data relevant to the conservation of fish stocks, on marine scientific research, and on marine pollution.⁴² Article 8 of the 1979 LRTAP Convention requires the exchange of 'available information', through an executive body and bilaterally on emissions data at periods of time to be agreed upon of: certain air pollutants; major changes in national policies and general industrial development; control technologies for reducing air pollution; the projected cost of the emissions control; meteorological, and physico-chemical data relating to processes and effects; and national, subregional and regional policies. Article 4 of the 1985 Vienna Convention requires the exchange of 'scientific, technical, socio-economic, commercial and legal information', as further elaborated in Annex II to that Convention, as well as information on alternative technologies. The 1987 Montreal Protocol calls for information exchange on best technologies, possible alternatives to controlled substances and products, and costs and benefits of relevant control strategies.⁴³ The 2013 Minamata Mercury Convention's provisions on information exchange are similar to those of the Montreal Protocol, with the addition of a requirement on parties to exchange epidemiological information on exposure to mercury and mercury compounds.⁴⁴

A widespread concern about the limited effectiveness of the traditional language on information exchange resulted in the adoption, in some conventions, of more focused language. The 1992 Climate Change Convention, for example, calls on parties to promote and cooperate in 'the full, open and prompt exchange of relevant scientific, technological, technical, socioeconomic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies'.⁴⁵ A number of conventions have established more formal institutional arrangements and procedures for information exchange. Examples include the establishment of a documentation service,⁴⁶ an information service,⁴⁷ a permanent committee of information,⁴⁸ and clearing-houses to facilitate the exchange of scientific, technical, legal and other information on particular topics.⁴⁹ International organisations may also play a role in ensuring information exchange. They may be required to prepare an annual report,⁵⁰ or to keep parties 'abreast of... theoretical and practical work',⁵¹ or to convene

³⁵ 1992 Statement of Forest Principles, Principle 12(c); see also 2005 Central African Forest Ecosystems Treaty, Art. 1.

³⁶ 2006 International Tropical Timber Agreement, Arts. 1(h) and (o) and 28(5).

³⁷ 2003 Caspian Sea Framework Convention, Art. 5(c). ³⁸ 2010 Nairobi Convention, Art. 15(1) and 27(2).

³⁹ 2008 Integrated Coastal Zone Management Protocol, Art. 27. ⁴⁰ 2009 Ship Recycling Convention, Art. 7.

⁴¹ 1992 Biodiversity Convention, Art. 17(1). Art. 17(2) provides that information exchange shall include 'specialised knowledge [and] indigenous and traditional knowledge' and 'shall also, where feasible, include repatriation of information'.

⁴² Arts. 61, 143, 200 and 244. ⁴³ Art. 9(1). ⁴⁴ Art. 17(1).

⁴⁵ Art. 4(1)(h). See also 2015 Paris Agreement, Art. 13. ⁴⁶ 1951 European Plant Protection Convention, Art. VII.

⁴⁷ 1963 South-West Asia Locust Agreement, Art. II(1). ⁴⁸ 1954 African Phyto-Sanitary Convention, Art. 9.

⁴⁹ 2000 Biosafety Protocol, Art. 20 (Biosafety Clearing-House); 2010 Nagoya Protocol on Access to Genetic Resources, Art. 14 (Access and Benefit-Sharing Clearing-House).

⁵⁰ 1954 African Phyto-Sanitary Convention, Art. 3(b); 1990 EBRD Agreement, Art. 35.

⁵¹ 1959 Latin American Forest Research Agreement, Art. III(1)(c) and (d).

international information exchange conferences.⁵² Notwithstanding a greater willingness of states and the private sector to seek to improve flows of information, it is unclear how effective these general obligations to exchange information have been.⁵³

The apparently limited effectiveness of many earlier obligations was often due to the reluctance of states to share information which might have commercial value, and the obligation, usually raised by developed countries, to ensure respect for intellectual property rights. Under the Biodiversity Convention, this issue was addressed explicitly for the first time, although the language finally agreed raised more questions and uncertainties than it resolved.⁵⁴ In 2010, the parties to the Biodiversity Convention concluded the Nagoya Protocol, which is designed to facilitate access to genetic resources and associated traditional knowledge for the purposes of research and biotechnological applications, while also strengthening arrangements for sharing of the benefits of such activities with the country of origin.⁵⁵ Increasingly, agreements have also included express provisions on confidential information. The 2000 Biosafety Protocol, for example, requires information to be submitted to the clearing-house mechanism established under the Convention '[w]ithout prejudice to the protection of confidential information'.⁵⁶ Similarly, under the 1998 Chemicals Convention, the exchange of information is on condition that parties 'shall protect any confidential information as mutually agreed'.⁵⁷ While protections for confidential information may facilitate greater information exchange in the future, confidentiality restrictions, if broadly construed, can also limit the scope of required information disclosure to the detriment of other states and the general public.

Reporting and Provision of Information⁵⁸

The obligation to report or to notify certain information on a regular or periodic basis, outside the context of an emergency situation or the occurrence of a particular event or activity, is a regular feature of international environmental agreements. At least four types of reporting or information provision requirements are used in international environmental agreements. First, the provision of a periodic report provided by an international organisation or subsidiary treaty body to the parties to a treaty; second, a requirement that parties provide a periodic report to the institutional organs or to other parties to that treaty; third, a party (or state) may be required to provide information to another party (or state) on the occurrence of a certain event or activity; and, fourth, a treaty may allow for a report to be presented by a non-governmental actor to a party to a treaty, which may be subject to onward transmission by the latter.

⁵² 1959 Plant Protection Agreement, Art. VIII.

⁵³ See A. Gupta, 'Transparency to What End? Governing by Disclosure Through the Biosafety Clearing House', 28(1) *Environment and Planning C: Government and Policy* 128 (2010).

⁵⁴ Chapter 10, pp. 394–5.

⁵⁵ 2010 Nagoya Protocol on Access to Genetic Resources, 29 October 2010, in force 12 October 2014, UNEP/CBD/COP/DEC/X/1 of 29 October 2010. See further, pp. 725–6.

⁵⁶ Art. 20(3). The Cartagena Protocol also establishes modalities for dealing with confidential information under the notification provisions of the Protocol (Art. 21).

⁵⁷ Art. 14(1) and (2). The category of confidential information is limited, however, to further the purposes of the Convention (Art. 14(3) and (4)). See also 2001 POPs Convention, Art. 9(5).

⁵⁸ On the relationship between reporting and compliance, see Chapter 5, pp. 152–3.

Reports by Organisations

Some environmental treaties require one or more of the institutional organs to provide regular reports to its parties. This technique is used to inform all the parties of relevant measures being taken under the Convention, or to provide information on the activities of the organisation itself to ensure accountability. An early example was the 1949 Inter-American Tropical Tuna Convention, which required the Inter-American Tropical Tuna Commission to 'submit annually to the government of each high contracting party a report on its investigations and findings, with appropriate recommendations'.⁵⁹ Other conventions provide that reports should be submitted every two years,⁶⁰ or for the transmission of 'periodic reports' or publications,⁶¹ or at such time as the institutional organ 'may consider necessary'.⁶² The 1990 Articles of Agreement establishing the European Bank for Reconstruction and Development require the Bank to provide an annual report on the environmental impact of its activities.⁶³ Occasionally, the institutional organ might be required to report to another international organisation.⁶⁴

Reports Under Treaties or Other Agreements

The second type of reporting obligation arises where a party to a treaty is required to provide a periodic report to the institutions established under the treaty or to other parties to that agreement. These reporting requirements, which increasingly require detailed and regular information, are used to provide information on the implementation of treaty commitments. The 1933 London Convention was among the first, requiring parties to 'notify the Government of the United Kingdom . . . of the establishment of any national parks or strict natural reserves . . . and of the legislation, including the methods of administration and control, adopted in connexion therewith', as well as measures adopted in regard to the grant of certain licences.⁶⁵ Similar reporting requirements exist for authorisations of licences for the killing and taking of living resources;⁶⁶ the construction of certain installations or projects and works⁶⁷ or proposed expeditions;⁶⁸ statistical information concerning catches;⁶⁹ or the establishment of quotas.⁷⁰

Often, parties must provide progress reports on implementation measures and their effectiveness, and other relevant national legislation,⁷¹ including the adoption of import restrictions.⁷² Parties may also be required to report infractions of conventions by persons within their

⁵⁹ Art. I(2). The Convention has now been replaced by the 2003 Antigua Convention, which came into force on 27 August 2010.

⁶⁰ 1966 Atlantic Tunas Convention, Art. III(9); 2006 ITTA, Art. 28.

⁶¹ 1962 African Migratory Locust Convention, Art. 7(2)(a); 1973 CITES, Art. XII(2)(f) and (g).

⁶² 1971 ILO Benzene Convention, Art. 20. ⁶³ Art. 35(2).

⁶⁴ 1979 Berne Convention, Art. 15 (from the Convention's Standing Committee to the Committee of Ministers of the Council of Europe).

⁶⁵ Arts. 5(1) and 8(6). The government of the United Kingdom was required to communicate information so received to other governments (Arts. 5(3) and 8(6)).

⁶⁶ 1946 International Whaling Convention, Art. VIII(1); 1972 Antarctic Seals Convention, Art. 4.

⁶⁷ 1958 Convention on the Continental Shelf, Art. 5(5); 1980 Convention Creating the Niger Basin Authority, Art. 4(4).

⁶⁸ 1972 Antarctic Seals Convention, Annex, para. 6(d). ⁶⁹ 1946 International Whaling Convention, Art. VII.

⁷⁰ 1969 Southeast Atlantic Convention, Art. VIII(3)(a) and (b).

⁷¹ 1956 Plant Protection Agreement, Art. II(1)(b); 1989 Basel Convention, Art. 3(1); 1992 Biodiversity Convention, Art. 26; 1992 Climate Change Convention, Art. 12 and 2015 Paris Agreement, Art. 13; 1992 OSPAR Convention, Art. 22; 2013 Minamata Mercury Convention, Art. 21.

⁷² 1951 International Plant Protection Convention (New Revised Text), Art. VII(2)(b) and (c); 1989 Basel Convention, Arts. 4 and 13.

jurisdiction⁷³ and the penalties they impose,⁷⁴ as well as information on persons liable to contribute to a pollution fund established in accordance with the terms of a convention.⁷⁵ Increasingly, parties are being called upon to provide inventories or statistics of their natural and cultural resources,⁷⁶ or of the production of certain chemicals or products,⁷⁷ and to report on their emissions and discharges and the consequences thereof.⁷⁸

Parties to a treaty can also be required to report on particular situations or events, including: the existence of certain hazardous facilities;⁷⁹ the transit or theft of hazardous substances;⁸⁰ the actions they take in relation to certain pollution incidents;⁸¹ substances dumped into the marine environment;⁸² the existence of evidence suggesting that unlawful dumping may be taking place;⁸³ incidents or accidents involving oil or other harmful substances;⁸⁴ the discharge of land-based pollutants;⁸⁵ and accidents involving hazardous waste.⁸⁶ Other examples of specific reporting requirements arise upon the occurrence, outbreak and spread of pests and diseases,⁸⁷ on inadequate oil disposal facilities at ports,⁸⁸ and on conservation measures concerning fish stocks.⁸⁹

The treaties of the international climate change regime illustrate the extent to which reporting requirements have become increasingly detailed and onerous. Reporting, which is described as ‘the communication of information related to implementation’,⁹⁰ is a central technique for ensuring implementation of the 1992 Climate Change Convention. All parties must publish and make available to the Conference of the Parties ‘national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol’, and communicate to the Conference of the Parties ‘information related to implementation’.⁹¹ These reports must include a general description of steps taken or envisaged to implement the Convention and ‘any other information the party considers relevant to the

⁷³ 1946 International Whaling Convention, Art. IX(4); 1973 MARPOL, Art. 4(3).

⁷⁴ 1954 Oil Pollution Convention, Art. VI(3).

⁷⁵ 1971 Oil Fund Convention, Art. 15(2), as amended by the 1992 Protocol.

⁷⁶ 1972 World Heritage Convention, Art. 11(1) (property forming part of the cultural and natural heritage); 1979 Bonn Convention, Art. VI(2) (migratory species of wild animals); 2006 IITA, Art. 27(3) (tropical timber and sustainable forest management); 1992 Biodiversity Convention, Art. 7(a) and (b); 1992 Climate Change Convention, Art. 4(1)(a).

⁷⁷ 2001 POPs Convention, Art. 15.

⁷⁸ 1976 Rhine Chemical Pollution Convention, Art. 2(1) and (2) and Annex III (of certain substances into the Rhine); 1976 Rhine Chloride Pollution Convention, Art. 3(5) (increase in chloride-ion concentrations); 1985 SO₂ Protocol, Art. 4 (sulphur dioxide emissions); 1988 NO_x Protocol, Art. 8(1)(a) (emissions of nitrogen oxides); 1987 Montreal Protocol, as amended, Art. 7 (production, imports and exports of certain ozone-depleting substances); 1992 Climate Change Convention, Art. 12(1) and 2015 Paris Agreement, Art. 13; 1998 POPs Protocol to the 1979 LRTAP Convention, Art. 9(1)(b) (emissions of persistent organic pollutants); 1998 Heavy Metals Protocol, Art. 7(1)(b) (emissions of heavy metals); 1999 Acidification, Eutrophication, Ground Ozone Protocol, Art. 7(1)(b).

⁷⁹ 1963 Brussels Supplementary Convention, Art. 13(a)–(e) (nuclear power plants); 1997 Supplementary Compensation Convention, Art. VIII (list of nuclear installations).

⁸⁰ 1980 Convention on the Physical Protection of Nuclear Material, Art. 4(5); 2005 Amendment to the Convention, para. 7.

⁸¹ 1969 Bonn Agreement, Art. 8.

⁸² 1972 Oslo Convention, Art. 11, replaced by the 1992 OSPAR Convention; 1972 London Convention, Art. VI(4), and 1996 Protocol, Art. 9(4).

⁸³ 1972 Oslo Convention, Art. 15(2), replaced by the 1992 OSPAR Convention; 1972 London Convention, Art. VII(3).

⁸⁴ 1973 MARPOL, Art. 8, and Protocol I; 1981 Abidjan Emergency Protocol, Art. 7 and Annex.

⁸⁵ 1974 Baltic Convention, Art. 6(4). ⁸⁶ 1989 Basel Convention, Art. 13(1).

⁸⁷ 1951 International Plant Protection Convention (New Revised Text), Art. VIII(1)(a).

⁸⁸ 1954 Oil Pollution Convention, Art. VIII(3). ⁸⁹ 1952 North Pacific Fisheries Convention, Art. III(1)(c)(iii).

⁹⁰ 1992 Climate Change Convention, Art. 12. ⁹¹ Art. 4(1)(a) and (j).

achievement of the objective of the Convention and suitable for inclusion in its communication including, if feasible, material relevant for calculations of global emission trends'.⁹² The EU and parties which are members of the OECD are additionally required to include in their communications a detailed description of the policies and measures that they have adopted to implement their specific commitments under the Convention and a specific estimate of the effects that the policies and measures they have taken will have on anthropogenic emissions by its sources and removals by its sinks of greenhouses gases.⁹³ All developed country parties must provide information on the provision by them of 'new and additional financial resources', other assistance and the transfer of and access to environmentally sound technologies and know-how.⁹⁴ The Kyoto Protocol added the additional burden on Annex I countries of reporting the progress made towards reaching greenhouse gas reduction commitments.⁹⁵ Expert review teams established pursuant to Article 8 of the Protocol undertake regular reviews of the inventories and national communications submitted by Annex I parties.⁹⁶ Article 13 of the 2015 Paris Agreement reiterates the Convention's requirements and seeks to build on those arrangements and the provisions of the Kyoto Protocol in establishing 'an enhanced transparency framework for action and support, with built-in flexibility which takes into account Parties' different capacities and builds upon collective experience.' Parties are required to provide information on greenhouse gas inventories, implementation progress, climate change impacts and adaptation, and financial, technology transfer and capacity-building support provided to developing countries.⁹⁷

Under the Convention, differentiated time frames were adopted for providing national communications. Developed country parties were required to provide their initial communication within six months of the Convention's entry into force; all other parties were required to provide their initial communication within three years of entry into force, except for least developed countries that may make their initial communication available at their discretion.⁹⁸ Developed country parties were required to submit their sixth communications by the beginning of 2014. Other innovations of the 1992 Climate Change Convention include the possibility for two or more parties to make a 'joint communication' provided that such a communication includes information on: each individual party's fulfilment of its obligations;⁹⁹ rules on confidentiality;¹⁰⁰ the provision to developing countries of financial resources 'to meet the agreed full costs incurred ... in complying with' their reporting requirements;¹⁰¹ and the establishment of a subsidiary body for implementation to consider information provided by parties in accordance with Article 12.¹⁰²

As indicated above, the 2015 Paris Agreement will build on and 'enhance' the Convention and Protocol's reporting infrastructure. A key innovation of the Agreement is the provision for a regular 'global stocktake' of implementation and progress towards achieving the treaty's objectives. The global stocktake, to be undertaken in 2023 and every five years thereafter,¹⁰³ will rely on the reporting information submitted by parties and is to be conducted in 'a comprehensive and facilitative manner, considering mitigation, adaptation and the means of implementation and support, and in the light of equity and the best available science.'¹⁰⁴

⁹² Art. 12(1)(b) and (c). See also 1997 Kyoto Protocol, Art. 7, and Decision 13/CMP.1 on Modalities for Accounting of Assigned Amounts under Article 7, Paragraph 4 of the Protocol.

⁹³ Art. 12(1) and (2). ⁹⁴ Arts. 12(3) and 4(3), (4) and (5). ⁹⁵ Arts. 3 and 7(1) and (4).

⁹⁶ See Decision 22/CMP.1 which contains Guidelines for Review under Article 8 of the Protocol.

⁹⁷ 2015 Paris Agreement, Art. 13(7)–(9). ⁹⁸ Art. 12(5). ⁹⁹ Art. 12(8). ¹⁰⁰ Art. 12(9). ¹⁰¹ Art. 4(3).

¹⁰² Art. 10(2). ¹⁰³ Art. 14(2). ¹⁰⁴ Art. 14(1).

Reports of Events Other than Emergencies

The third situation requiring the provision of information or a report (closely connected to the obligation to consult) arises on the occurrence of an event other than an emergency situation. Examples include the construction of an installation or advance notice of activities that may entail significant environmental risk. In such circumstances, the state in which the activity is taking place may be required to provide information either directly to states that may be affected or to an appropriate intergovernmental organisation. The need for the provision of such information has been widely recognised by the international community since the mid 1970s. In 1972, UN General Assembly Resolution 2995 recognised that cooperation towards implementation of the 1972 Stockholm Declaration

will be effectively achieved if official and public knowledge is provided of the technical data relating to the work to be carried out by states within their national jurisdiction, with a view to avoiding significant harm that may occur in the environment of the adjacent area.

The 1974 OECD Recommendation on Principles Concerning Transfrontier Pollution similarly provided that:

[p]rior to the initiation in a country of works or undertakings which might create a significant risk of pollution, this country should provide early information to other countries which are or may be affected.¹⁰⁵

Similar provisions exist in the 1978 UNEP draft Principles of Conduct,¹⁰⁶ the 1986 WCED Legal Experts Group Report¹⁰⁷ and Principle 19 of the Rio Declaration. Several treaties require the provision of information on the construction of certain installations, including the siting of hazardous installations or the conduct of hazardous activities near border areas.¹⁰⁸ The 1980 Agreement Between Spain and Portugal on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity of the Frontier provides in Article 2 that:

[t]he competent authorities of the constructor country shall notify the neighbouring country of applications for licences for the siting, construction or operation of nuclear installations in the vicinity of the frontier which are submitted to them.¹⁰⁹

¹⁰⁵ OECD C(74)224, 21 November 1974, Annex, para. 6. See also OECD Council Recommendation, Implementation of a Regime of Equal Right of Access and Non-Discrimination in Relation to Transfrontier Pollution, OECD C(77)28, 23 May 1977, Annex, para. 9(a); OECD Council Decision, Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage, C(88)84/FINAL, paras. 5, 6 and 7; OECD Council Recommendation, Chemical Accident Prevention, Preparedness and Response, C(2003)221.

¹⁰⁶ Principle 6. ¹⁰⁷ Art. 16(1).

¹⁰⁸ 1958 Convention on the Continental Shelf, Art. 5(5) (installations for the exploration and exploitation of the natural resources of the continental shelf); 1991 Espoo Convention, Art. 3; 1992 Industrial Accidents Convention, Art. 4; 1992 Watercourses Convention, Art. 14; 1997 Watercourses Convention, Art. 12.

¹⁰⁹ 31 March 1980, in force 13 July 1981, UN registration No. 20356. See also Belgium–France, Convention on Radiological Protection Relating to the Installations at the Ardennes Nuclear Power Station, 23 September 1966, 988 UNTS 288; Austria–Czechoslovakia, Agreement on Questions of Common Interest in Relation to Nuclear Facilities, 18 November 1982, in force 1 June 1984, reprinted in Bundesgesetzblatt No. 208/1984.

Article 3 requires comments by the neighbouring country to be taken into account before the licence is issued.

The number and diversity of relevant treaty requirements regarding reporting in such situations raises the question of whether provision of prior information regarding certain hazardous activities is required by customary international law. The International Law Association's 1982 Montreal Rules¹¹⁰ and the Institut de Droit International's 1987 Resolution on Transboundary Air Pollution¹¹¹ suggest that customary law does and should require states planning activities which might entail a significant risk of transfrontier pollution to give early notice to a state likely to be affected and to enter into good faith consultations at the request of such a state. Principle 19 of the Rio Declaration appears to restate that obligation in unequivocal terms, and this is also confirmed by the 2001 ILC draft Articles on Prevention of Transboundary Harm.¹¹²

In the *Pulp Mills* case, the ICJ was presented with an opportunity to consider these questions arising out of Uruguay's alleged failure to follow consultation procedures, laid down in the 1975 Statute of the River Uruguay, before authorising the construction of pulp mill facilities on the banks of the river. The ICJ upheld Argentina's complaint that Uruguay had failed to comply with the procedural obligations incumbent upon it under the Statute by failing to transmit to the Commission for the River Uruguay (CARU) information concerning its plan to construct the pulp mills. The Court emphasised that it was not sufficient that CARU had received information from other sources as 'the information on the plans for the mills which reached CARU via the companies concerned or from other non-governmental sources cannot substitute for the obligation to inform laid down in Article 7, first paragraph, of the 1975 Statute, which is borne by the party planning to construct the works referred to in that provision'.¹¹³ The ICJ described the obligation to inform CARU as one allowing for 'the initiation of cooperation between the Parties which is necessary in order to fulfil the obligation of prevention', itself a customary law obligation.¹¹⁴

The Court also discussed the related obligation of notification, which arose under the 1975 Statute in circumstances where CARU decided that a planned operation might cause significant damage to the other party or where a decision on that question could not be reached.¹¹⁵ The Court opined:

the obligation to notify is intended to create the conditions for successful co-operation between the parties, enabling them to assess the plan's impact on the river on the basis of the fullest possible information and, if necessary to negotiate the adjustments needed to avoid the potential damage that it might cause.¹¹⁶

As Uruguay had failed to notify Argentina of the environmental impact assessments for the pulp mills through CARU, and indeed, only transmitted those assessments to Argentina following issue of initial environmental authorisations for the mills under its domestic law, the

¹¹⁰ Arts. 6 and 7. The Rapporteur, Professor Dietrich Rauschnig, observed that 'recent state practice shows that information is not usually withheld' (ILA, Report of the 59th Conference (1982), 545).

¹¹¹ Art. 8(1). ¹¹² See p. 695. ¹¹³ Para. 110.

¹¹⁴ Para. 102. On the customary law status of the obligation of prevention, see Chapter 6, pp. 211-12.

¹¹⁵ 1975 Statute, Art. 7(2). ¹¹⁶ Para. 113. See also para. 115.

Court concluded Uruguay had failed to comply with its notification obligations under the 1975 Statute.¹¹⁷ Consequently, the Court held that, 'as long as the procedural mechanism for co-operation between the parties to prevent significant damage to one of them is taking its course, the State initiating the planned activity is obliged not to authorize such work and, *a fortiori*, not to carry it out'.¹¹⁸ Notwithstanding this robust finding, and the Court's recognition that the information and notification obligations under the 1975 Statute would be of 'no point' if the party initiating the planned activity were to authorise or implement it without waiting for the cooperation mechanism to be brought to a conclusion,¹¹⁹ the ICJ was not prepared to pursue this reasoning to its logical conclusion that Uruguay was thereby obligated not to construct the pulp mills.¹²⁰ This result is disappointing as it undermines the integrity of procedural obligations of information provision in international environmental treaties by indicating to states that non-compliance will not prevent them carrying out activities with potential adverse impacts on shared resources.¹²¹

Information to and from Non-State Organisations

A fourth type of reporting requirement, which may be considered to be in an emerging stage of development, relates to obligations allowing, or requiring, non-governmental actors to report certain information to states, possibly for onward transmission to other parties or to the agreement's institutional organ, or to provide informational reports to organisations. The 2003 Antigua Convention (which replaces the 1949 Inter-American Tropical Tuna Convention) provides an example: the Commission is required to promote transparency in the implementation of the Convention, *inter alia*, through, 'as appropriate, facilitating consultations with, and the effective participation of, non-governmental organizations, representatives of the fishing industry, particularly the fishing fleet, and other interested bodies and individuals'.¹²²

The general public may also be a source of information inputs as recognised by the 1998 Aarhus Convention. This Convention provides for the submission of reports from the public to decision-making bodies (at the national or EU level) when considering decisions on specific activities, or when considering executive regulations or other 'generally applicable legally binding normative instruments'.¹²³ A 2005 amendment to the Aarhus Convention dealing with decisions concerning the environmental release of genetically modified organisms (GMOs) also contains requirements for parties to enable the public to submit 'any comments, information, analyses or opinions' considered relevant to a proposed GMO release.¹²⁴

Consultation

The international community has recognised the importance of information on activities and other circumstances that could affect the interests of states in relation to shared natural resources. In the *Pulp Mills* case, the ICJ considered that procedural obligations of information, notification and negotiation were particularly 'vital when a shared resource is at issue, as in the case of the River Uruguay, which can only be protected through close and continuous

¹¹⁷ Paras. 121-2. ¹¹⁸ Para. 144. ¹¹⁹ Para. 147. ¹²⁰ Para. 157.

¹²¹ See also *Costa Rica v. Nicaragua* cases, paras. 106-11 and 165-72. ¹²² Art. XVI(1)(b).

¹²³ Arts. 6(7) and 8(c); cf. Art. 7 (information on plans, programmes or policies related to the environment).

¹²⁴ Decision II/1, 20 June 2005, not yet in force, ECE/MP.PP/2005/2/Add.2, Annex I *bis*, para. 6.

cooperation between the riparian States'.¹²⁵ Typically, such cooperation is provided for in international agreements by two related commitments: a requirement to provide information to potentially affected states on particular activities, and a requirement to engage in consultation. The latter presupposes the provision of certain information. Principle 19 of the Rio Declaration reflects what many states have recognised as required practice in terms that reflect an obligation of customary international law:

states shall provide prior and timely notification and relevant information to potentially affected states on activities that may have a significant adverse transboundary environmental effect and shall consult with those states at an early stage and in good faith.

The obligation of states to consult with each other in the context of the conduct of certain activities has also been recognised by international courts and tribunals,¹²⁶ and is reflected in many international environmental instruments,¹²⁷ as well as in Article 9 of the ILC's draft Articles on Prevention of Transboundary Harm. In 2001, the ITLOS prescribed provisional measures ordering Ireland and the United Kingdom to cooperate and, for that purpose, to 'enter into consultations forthwith' to exchange further information on the possible consequences for the Irish Sea arising out of the commissioning of the MOX plant, to monitor the risks or the effects of the operation of the MOX plant for the Irish Sea, and to devise measures to prevent pollution of the marine environment which might result from the operation of the MOX plant.¹²⁸ The order was premised on 'prudence and caution' and the duty to cooperate under Part XII of UNCLOS.¹²⁹

Environmental treaties have required consultation to take place between a number of different actors, including between two or more states; between a state and an international organisation; between a state and a non-governmental actor;¹³⁰ between two or more international organisations,¹³¹ and between an international organisation and a non-governmental actor.¹³² Many institutional arrangements established by environmental treaties, such as conferences or meetings of parties, serve as fora for consultations between parties.¹³³ Specialised institutional arrangements for environmental treaties have included a special Consultative Committee¹³⁴ and a Consultative Committee of Experts.¹³⁵

The obligation to consult arises in many circumstances. As a general matter, consultation has been required on the implementation of an agreement,¹³⁶ or on 'all problems of common interest' raised by the application of a particular convention.¹³⁷ Consultation can also be required as part

¹²⁵ Para. 81.

¹²⁶ *Lac Lanoux* arbitration, Chapter 9, pp. 341–2; *Fisheries Jurisdiction* cases, Chapter 11, pp. 512–13; *Costa Rica v. Nicaragua* cases, Chapter 9, pp. 359–60.

¹²⁷ See also 1978 UNEP draft Principles, Principle 7; 1986 WCED Legal Principles, Art. 17.

¹²⁸ Order of 3 December 2001, para. 89(1); Chapter 6, pp. 216–17. ¹²⁹ Paras. 82 and 84.

¹³⁰ In the *Case of the Saramaka People v. Suriname* (28 November 2007), the Inter-American Court of Human Rights found that the duty to consult affected tribal peoples was an element of the right to property in Art. 21 of the American Convention, paras. 129 and 133–4.

¹³¹ 1983 ITTA, Art. 14(1); see also 2006 ITTA, Art. 15.

¹³² 1982 UNCLOS, Arts. 165(2)(c) and 169(1); 1983 ITTA, Art. 14(1); see also 2006 ITTA, Art. 15.

¹³³ 1978 Northwest Atlantic Fisheries Convention, Art. VI(1)(a).

¹³⁴ 1985 South Pacific Nuclear Free Zone Treaty, Art. 10 and Annex 3. ¹³⁵ 1977 ENMOD Convention, Art. V(2).

¹³⁶ 1985 ASEAN Agreement, Art. 18(2)(e).

¹³⁷ 1963 Brussels Supplementary Convention, Art. 16(a); 1977 ENMOD Convention, Art. V(1) and (2).

of the process for the peaceful settlement of disputes,¹³⁸ including by removing doubts concerning the fulfilment by a party of its treaty obligations.¹³⁹

A second type of situation calling for consultation arises when the activities of one state are likely to affect the environment or the rights and interests of another state. Thus, a state may be obliged to enter into consultations when, for example, pollution caused by the activities of one party to an agreement is likely to affect adversely the interests of another party to that agreement;¹⁴⁰ or when there is a question of the 'permissibility of environmentally harmful activities which entail or may entail considerable nuisance' in another party;¹⁴¹ or where a party is 'actually affected by or exposed to' a significant risk of pollution.¹⁴² This was the type of situation at issue in the *Pulp Mills* case, discussed above. The ICJ observed that it was through cooperation that the states concerned could 'jointly manage the risks of damage to the environment that might be created by the plans initiated by one or other of them, so as to prevent the damage in question'.¹⁴³

A third category of situations requiring consultation arises over the use of shared natural resources. Thus, consultation can be required generally in respect of shared resource issues,¹⁴⁴ as well as in the following specific situations: to avoid infringement of the rights and interests of states where natural resource deposits (such as wetlands) lie across two or more jurisdictions;¹⁴⁵ where there are plans 'to initiate, or make a change in, activities which can reasonably be expected to have significant effects beyond the limits of national jurisdiction';¹⁴⁶ where a party 'intends to establish a protected area contiguous to the frontier or to the limits of the zone of national jurisdiction of another party';¹⁴⁷ where certain commercial activities may harm wildlife;¹⁴⁸ and for the dissemination of information on environmental impact assessments.¹⁴⁹

A fourth category of situations requiring consultation arises in times of emergency. Consultations may be required: to ensure that appropriate action is taken in emergency situations;¹⁵⁰ prior to the issue of a special permit to permit the marine dumping of hazardous wastes and other matters in emergencies;¹⁵¹ and to minimise the radiological consequences of a nuclear accident.¹⁵² Consultations are also required between a party and the most representative organisations of employers and workers to implement national policies on protection of the working environment and in applying the provisions of relevant conventions.¹⁵³

The obligation to consult in such situations is now widely recognised by customary international law, and the failure to engage in consultation may violate the principles of good faith and international cooperation under international law. This view is supported by the *Lac Lanoux*

¹³⁸ 1959 Antarctic Treaty, Art. VIII(2); 1988 CRAMRA, Art. 57(1); 1997 Watercourses Convention, Art. 17.

¹³⁹ 1971 Nuclear Weapons Treaty, Art. III(2).

¹⁴⁰ 1983 Quito LBS Protocol, Art. XII; 1980 Athens LBS Protocol, Art. 12(1).

¹⁴¹ 1974 Nordic Environmental Protection Convention, Art. 11; see also 1991 Espoo Convention, Art. 5; 1992 Industrial Accidents Convention, Art. 4.

¹⁴² 1979 LRTAP Convention, Art. 5. ¹⁴³ Para. 77.

¹⁴⁴ 2003 Revised African Nature Convention, Art. VII(3) (concerning 'underground water resources').

¹⁴⁵ 1971 Ramsar Convention, Art. 5; 1982 UNCLOS, Art. 142(2) (where consultation includes 'a system of prior informed consent').

¹⁴⁶ 1985 ASEAN Agreement, Arts. 19(2)(d) and (e) and 20(3)(b) and (c). ¹⁴⁷ 1982 Geneva SPA Protocol, Art. 6(1).

¹⁴⁸ 1972 Antarctic Seals Convention, Art. 6. ¹⁴⁹ 1985 Nairobi Convention, Art. 13(3); 1982 UNCLOS, Art. 206.

¹⁵⁰ 1981 Abidjan Emergency Protocol, Art. 10(1)(b).

¹⁵¹ 1996 London Protocol, Art. 8(2); 1986 Noumea Dumping Protocol, Art. 10(1).

¹⁵² 1986 IAEA Notification Convention, Art. 6; 1986 IAEA Assistance Convention, Arts. 2 and 11.

¹⁵³ 1960 ILO Radiation Convention, Art. 1; 1981 ILO Occupational Safety Convention, Art. 4(1).

arbitration, was further elaborated upon by the ICJ in the *Fisheries Jurisdiction* cases,¹⁵⁴ and was reflected in the order of ITLOS in the *MOX* case and the judgments of the ICJ in *Pulp Mills* and the *Costa Rica v. Nicaragua* cases.

Prior Informed Consent

The obligation to consult is closely linked to the principle of 'prior informed consent' (PIC).¹⁵⁵ This principle has achieved widespread support in relation to transboundary movements of hazardous wastes and hazardous substances, and has been adopted in a range of instruments, including, inter alia, the 1989 Basel Convention, the 1991 Bamako Convention, the 1996 Mediterranean Hazardous Wastes Protocol, the 2001 POPs Convention, the 2010 Nagoya Protocol to the Biodiversity Convention and the 2013 Minamata Mercury Convention.¹⁵⁶ It is also to be found in non-binding instruments adopted by the OECD and the IAEA, as well as in Agenda 21.¹⁵⁷

A second-generation formulation of the PIC procedures is reflected in the 1998 Chemicals Convention, discussed in Chapter 12. The 1998 Convention establishes a bifurcated PIC procedure. For chemicals listed under Annex III to the Convention, import countries must submit their approval, approval subject to limitations, or rejection of future imports, to the Secretariat.¹⁵⁸ For banned or severely restricted chemicals not listed under the Convention, export countries are required to ensure that proper notification is given to the import country before export of the chemicals.¹⁵⁹

The 2000 Biosafety Protocol does not refer to a PIC procedure, as such, but rather an advance informed agreement (AIA) procedure prior to the 'first intentional transboundary movement of living modified organisms for intentional introduction into the environment of the Party of import'.¹⁶⁰ The party of export is required to notify or ensure notification of an intent to export certain living modified organisms, which the party of import must acknowledge.¹⁶¹ The import may only proceed if the party of import has given written consent or, after not less than ninety days, where no such written consent is given.¹⁶² The Protocol also provides for a 'simplified procedure' where an importing party may specify in advance cases in which intentional movements may take place simultaneously with notification and imports to it which are to be exempted from the advance informed agreement procedure.¹⁶³

The 2010 Nagoya Protocol to the Biodiversity Convention, dealing with access to genetic resources and sharing of the resulting benefits, incorporates the language of 'prior informed consent'.¹⁶⁴ This consent must be obtained by applicants seeking access to genetic resources within the territory of a party.¹⁶⁵ Parties are also to ensure that, in the case of genetic resources held by indigenous or local communities, or where access is sought to traditional knowledge concerning such resources, they have in place measures that aim to ensure the prior informed consent or approval and involvement of such communities in the process of negotiating mutually agreed terms of access and benefit sharing.¹⁶⁶

¹⁵⁴ Chapter 11, pp. 512–13. ¹⁵⁵ For the definition, see Chapter 12, p. 586.

¹⁵⁶ See Chapter 12, for a discussion of transboundary movements of hazardous substances and wastes. The Nagoya Protocol is discussed in Chapter 10, pp. 403–4.

¹⁵⁷ Chapter 12, pp. 586ff. ¹⁵⁸ Art. 10 (providing for final or interim responses). ¹⁵⁹ Art. 12.

¹⁶⁰ Art. 7; Chapter 10, pp. 397–403. ¹⁶¹ Arts. 8 and 9 and Annex I.

¹⁶² Art. 11(2). The party of import must communicate its written consent to the Biosafety Clearing-House (Art. 10(3)).

¹⁶³ Art. 13. ¹⁶⁴ Chapter 10, pp. 403–4. ¹⁶⁵ Art. 6(1). ¹⁶⁶ Arts. 6(2) and 7.

Notification of Emergency Situations

The early availability of information on the escape of hazardous substances following an accident or event likely to have a significant effect on the environment of another state or in areas beyond national jurisdiction is necessary to allow other states and members of the international community to take the necessary actions to minimise damage. Principle 18 of the Rio Declaration recognised this need, and declared that:

states shall immediately notify other states of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those states. Every effort shall be made by the international community to help states so afflicted.¹⁶⁷

As a result of developments following the Chernobyl accident (see below) and other emergency incidents, Principle 18 reflects broadly held views and crystallises developments in treaties, non-binding instruments and the practice of states. The ILA's 1982 Montreal Rules¹⁶⁸ and the Institut de Droit International's 1987 Resolution¹⁶⁹ referred to the existence of such a rule, although evidence of state practice is hardly overwhelming. In the *Nicaragua* case, the ICJ affirmed that a substantive legal rule can be derived from principles of humanitarian law:¹⁷⁰

if a state lays mines in any waters whatever in which the vessels of another state have rights of access or passage, and fails to give any warning or notification whatsoever, in disregard of the security of peaceful shipping, it commits a breach of the principles of humanitarian law.¹⁷¹

Although the facts leading up to this *dictum* differ from those relating to industrial or other accidents affecting the environment, particularly on the question of the intent of the acting state, underlying considerations of humanity could apply also to the danger to the security of citizens in foreign countries arising from a transboundary release of hazardous substances.

Numerous early treaties required the provision of information, following the outbreak of 'especially dangerous' pests and diseases,¹⁷² or where there was 'evidence of serious danger to the environment and particularly to the water table',¹⁷³ or in respect of oil pollution emergencies.¹⁷⁴ More general requirements are set out in the 1982 UNCLOS, which requires a state immediately to notify other states it deems likely to be affected, and the competent international organisations, where the 'marine environment is in imminent danger of being damaged or has been damaged by pollution'.¹⁷⁵ Specific obligations have been adopted for accidents occurring

¹⁶⁷ See also Art. 17 of the ILC Draft Articles on Prevention of Transboundary Harm (2001). ¹⁶⁸ Art. 7.

¹⁶⁹ Art. 9(1)(a).

¹⁷⁰ *Case Concerning Military and Paramilitary Activities in and Against Nicaragua (Nicaragua v. United States)* (Merits) (1986) ICJ Reports 1.

¹⁷¹ *Ibid.*, 112. The principles of humanity were expressed by the ICJ in the earlier *Corfu Channel* case, Chapter 5, p. 182.

¹⁷² 1959 Plant Protection Agreement, Art. II. ¹⁷³ 1976 Rhine Chloride Convention, Art. 4(1).

¹⁷⁴ See 1969 Bonn Agreement, Art. 5(1); see also the UNEP Regional Seas Conventions, Chapter 11, pp. 465–72 and the 2013 Arctic Oil Pollution Preparedness and Response Agreement, Chapter 13, pp. 649–50.

¹⁷⁵ Art. 198.

during the transboundary movement of hazardous or other wastes;¹⁷⁶ under the 1992 Industrial Accidents Convention on transboundary accidents;¹⁷⁷ and in treaties governing general environmental matters.¹⁷⁸

The 1992 Biodiversity Convention provides that each party shall, as far as possible and as appropriate,

in the case of imminent or grave danger or damage, originating under its jurisdiction or control, to biological diversity within the area under jurisdiction of other states or areas beyond the limits of national jurisdiction, notify immediately the potentially affected states of such danger or damage, as well as initiate action to prevent or minimise such danger or damage.¹⁷⁹

Similarly, the 2000 Biosafety Protocol requires that parties shall:

take appropriate measures to notify affected or potentially affected States, the Biosafety Clearing-House and, where appropriate, relevant international organizations, when it knows of an occurrence under its jurisdiction resulting in a release that leads, or may lead, to an unintentional transboundary movement of a living modified organism that is likely to have significant adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health in such States.¹⁸⁰

Non-binding guidelines and recommendations also require the provision of such information. In 1974, the OECD recommended that '[c]ountries should promptly warn other potentially affected countries of any situation which may cause any sudden increase in the level of pollution in areas outside the country of origin of pollution'.¹⁸¹ In 1988, the OECD Council adopted a Decision on the exchange of information in relation to accidents capable of causing transfrontier damage.¹⁸² Principle 9 of the 1978 UNEP draft Principles of Conduct makes similar provision.¹⁸³

Nuclear Accidents

Other treaties establish the duty to warn potentially affected states in case of nuclear and other emergencies,¹⁸⁴ and several states have bilateral agreements requiring emergency information to be provided in the event of a nuclear accident. Thus, the 1983 Exchange of Notes Between the United Kingdom and France Concerning Exchanges of Information in the Event of Emergencies Occurring in One of the Two States which Could Have Radiological Consequences for the Other State provides:

¹⁷⁶ 1989 Basel Convention, Art. 13(1). ¹⁷⁷ See Chapter 12, pp. 576–7. ¹⁷⁸ 1985 ASEAN Agreement, Art. 20(3)(d).

¹⁷⁹ Art. 14(1)(d). ¹⁸⁰ Art. 17(1). ¹⁸¹ OECD Recommendation C(74)224, 21 November 1974, para. 9.

¹⁸² See OECD Council Decision, Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage, Preamble and Appendices I-III, 8 July 1988, 28 ILM 247 (1989).

¹⁸³ See also 1986 WCED Legal Principles, Art. 19.

¹⁸⁴ 1972 Agreement Between the United States and Canada Concerning the Great Lakes' Water Quality, 508 UNTS 26; 1983 Agreement Between the Federal Republic of Germany and the German Democratic Republic on Principles Covering Damage at the Border, *Bulletin Presse und Informationsamt der Bundesregierung*, No. 115 (September 1983).

Each state party shall inform the other without delay of any emergency which occurs in its state as a result of civil activities which may have radiological consequences liable to affect the other state.¹⁸⁵

The information is to be communicated through reciprocal warning centres capable of receiving and transmitting information twenty-four hours a day.

The question of whether a state must warn all other states that are, or might be, affected by a nuclear accident causing transboundary radioactive harm was described as 'the main legal issue involved in the Chernobyl nuclear disaster'.¹⁸⁶ In 1985, the IAEA drew up Guidelines on Reportable Events, Integrated Planning and Information Exchange in a Transboundary Release of Radioactive Materials (IAEA Information Guidelines).¹⁸⁷ These recommended that, in the event of a potential or actual release of radioactive material, which might cross or has crossed an international boundary and which could be of radiological safety significance, there should be a timely exchange of adequate information between the competent national authorities of the state in which the plant is situated and the authorities in neighbouring states.¹⁸⁸

Following the Chernobyl accident, many states maintained that the obligation to provide emergency information was a rule of international law. Much of the criticism of the former Soviet Union's failure to provide information immediately after the accident was couched in legal terms.¹⁸⁹ The IAEA Director General noted the failure of the Soviet system to inform its own citizens and neighbouring countries of a release that would affect them, the late implementation of the emergency measures and the apparent failure to warn immediately.¹⁹⁰ During the negotiation of the 1986 Notification Convention, support for the view that there was a legal obligation to provide information under customary law was expressed on several occasions,¹⁹¹ and many writers reached the same conclusion.¹⁹² Humanitarian and human

¹⁸⁵ For other such agreements, see P. Sands, *Chernobyl: Law and Communication* (Cambridge: Grotius, 1988), 199.

¹⁸⁶ Provisional Report of the Rapporteur, Twentieth Commission of the IDI, 'Air Pollution Across National Frontiers', 62 *Annuaire de l'Institut de Droit International* 178 (1987-I).

¹⁸⁷ IAEA Doc. INF/CIRC/321.

¹⁸⁸ Paras. 3.1 and 4.1.1. Paras. 4.1.2 and 4.3.2 provide the information should relate to the site, the facility, the emergency response plan, and in the event of an off-site emergency, should include the nature and time of the accident, the characteristics of the release and meteorological and hydrological conditions.

¹⁸⁹ See e.g. the US Secretary of State: 'When an incident has cross-border implications, there is an obligation under international law to inform others and do it promptly', in Final Report of the Rapporteur (do Nascimento e Silva), Twentieth Commission of the IDI, 'Air Pollution Across National Frontiers', 62 *Annuaire de l'Institut de Droit International* 259 (1987-I). See also the Statement of the Group of Seven: 'Each country . . . is responsible for prompt provision of detailed and complete information on nuclear emergencies and accidents, in particular those with potential transboundary consequences. Each of our countries accepts that responsibility' (Group of Seven, Statement on the Implications of the Chernobyl Nuclear Accident, 5 May 1986, 25 ILM 1005 (1986)).

¹⁹⁰ Speech by the Director General of the IAEA to the International Press Institute, Vienna, 13 May 1986. Transcript provided by the IAEA.

¹⁹¹ See Statement of the US representative at the Final Plenary Meeting of Governmental Experts on 15 August 1986, IAEA Doc. GC (SPL.I) 2, Annex V, 4; the Chinese representative (*ibid.*, 5); and the Japanese representative (*ibid.*, 21). The Chairman of the Meeting of Governmental Experts at the Final Plenary Session on 15 August 1986 stated, in his summing up, that 'the [Notification and Assistance] conventions are not intended to derogate from any international obligations on early notification and assistance that may already exist under international law' (IAEA Doc. GC (SPL.I), 2, Annex VI, 2).

¹⁹² Professor Dietrich Rauschnig, as quoted in Final Report, Twentieth Commission of the IDI (see n. 189), 259; see also W. Rudolf (*ibid.*, 280).

rights principles also justify the provision of information to people who might be affected by a nuclear or other accident.¹⁹³

1986 Notification Convention

The failure of the former Soviet Union to provide immediate information led to the 1986 Notification Convention, which was opened for signature within six months of the Chernobyl accident. It incorporates many of the recommendations set out in the IAEA Information Guidelines, and applies in the event of any 'accident involving facilities or activities of a state party or of persons or legal entities under its jurisdiction or control'.¹⁹⁴ In the event of such an accident, states parties must notify, directly or through the IAEA, those states which are or may be physically affected with details of the accident, its nature, the time of its occurrence and its exact location.¹⁹⁵ They must also promptly provide the states and the IAEA with relevant available information so as to minimise the radiological consequences in those states. This includes the cause and foreseeable development of the accident, the general characteristics of the radioactive release (including its nature, form, quantity, composition and effective weight), current and future meteorological and hydrological conditions, planned or taken protective measures, and the predicted behaviour over time of the release.¹⁹⁶ Such information is to be supplemented at 'appropriate intervals' by the provision of relevant information including the foreseeable or actual termination of the emergency situation.¹⁹⁷ States should also respond 'promptly' to a request for further information or consultations sought by an affected state.¹⁹⁸ For example, Japan made notifications under the Convention in relation to the radiation leak at the Fukushima nuclear power station.¹⁹⁹

The Convention was the first multilateral agreement to provide detailed rules on the provision of information in emergency situations, involving a role for the national authorities of states parties²⁰⁰ and the IAEA, as well as a binding dispute settlement mechanism. The Convention is not, however, exhaustive or immune from criticism; its deficiencies were particularly evident

¹⁹³ European Court of Human Rights cases: *Tătar v. Romania*, App. No. 67021/01, 27 January 2009; *Budayeva v. Russia*, App. Nos. 15339/02, 21166/02, 20058/02, 11673/02 and 15343/02, Judgment of 20 March 2008; *Öçkan and Others v. Turkey*, App. No. 46771/99, Judgment of 28 March 2006; and *Lemke v. Turkey*, App. No. 17381/02, Judgment of 5 June 2007. On human rights and the environment, see further Chapter 17.

¹⁹⁴ Vienna, 26 September 1986, in force 27 October 1986, 25 ILM 1370 (1986), Art. 1(1). The Convention only applies to certain 'facilities and activities' (Art. 1(2)). In October 1987, an accident occurred in Brazil when abandoned radiotherapy equipment was broken open by a scrap metal dealer. This led to widespread radioactive contamination and the death of a number of people: see *Financial Times*, 8 October 1987. It is unclear whether the Convention applies to such 'activities' (Art. 1(2)(e) (the loss of the Russian submarine, the *Kursk*, in August 2000, would appear to be covered by the Convention, which applies to 'any nuclear reactor wherever located' (Art. 1(2)(a)).

¹⁹⁵ Art. 2. ¹⁹⁶ Art. 5(1). ¹⁹⁷ Art. 5(2). ¹⁹⁸ Art. 6.

¹⁹⁹ See 'Japan Defends Radioactive Water Disposal, Vows to Fully Inform World', *Kyodo News*, Tokyo, 5 April 2011, at www.hiroshimapeacemedia.jp/mediacenter/article.php?story=20110406163032160_en. The IAEA was contacted instead of individual neighbouring states as Japan '[did] not think that the case affects other countries across the border at this stage' (Japanese Ministry of Foreign Affairs, 'Press Conference by Minister for Foreign Affairs Takeaki Matsumoto', 5 April 2011, available at www.mofa.go.jp/announce/fm_press/2011/4/0405_01.html). A question was raised as to whether Japan made sufficient notification under the Convention in relation to the release of contaminated water into the Pacific on 4 April 2011. See e.g. Press Conferences by Chief Cabinet Secretary Yukio Edano on 4, 5 and 6 April 2011, available at http://japan.kantei.go.jp/incident/press_conferences/ccs/index.html; Japanese Ministry of Foreign Affairs, 'The Release of Low-Level Contaminated Water into the Ocean from the Fukushima Daiichi Nuclear Power Plant', 9 April 2011, available at www.mofa.go.jp/j_info/visit/incidents/llc_water.html; see also S. Kass, 'International Law Lessons from the Fukushima Nuclear Disaster', 245(82) *New York Law Journal* 3 (2011).

²⁰⁰ Art. 7.

after the Fukushima nuclear accident and the release of radioactive wastewaters from the damaged reactor by Japan.²⁰¹ First, the Convention does not appear to apply to accidents caused by nuclear weapons and their testing.²⁰² Second, certain of the recommendations contained in the IAEA Information Guidelines were not included. In particular, the recommendation in Chapter III that ‘intervention levels for the introduction of protective measures such as sheltering and evacuation be set in advance by competent national authorities’²⁰³ was not included in the Convention. In addition, the whole of Chapter V, on ‘Integrated Planning’, was excluded. Third, the reference in Article 1(1) to an accident that ‘could be of radiological safety significance for another state’ leaves it to the discretion of the state in whose territory or under whose jurisdiction or control the accident has occurred to determine what is or is not of radiological safety significance and what are the chances that another state will be affected. Given the dangers of radioactivity, it would have been preferable that all radioactive releases be notified to the IAEA. Failing that, there should be an agreed level that triggers the obligation to provide information. Fourth, several states entered reservations restricting the application of the Convention. Most relate to the non-applicability of the dispute settlement provision, but some relate to the substantive provisions: the Chinese government stated that the Convention does apply to cases caused by ‘gross negligence’.²⁰⁴ Finally, the Convention does not require states giving or receiving information to make it available to members of the public. The IAEA Information Guidelines noted that:

Dissemination of information to the public is an important responsibility of the appropriate authorities in each state. Particular arrangements ensuring the necessary co-ordination across international borders should be established.²⁰⁵

The importance of public access to information is recognised in other treaties, including at least one adopted prior to the 1986 Notification Convention, namely the 1974 Nordic Convention.²⁰⁶ A final point concerning the provision of information in emergency situations relates to the responsibility of the mass media in the reporting of matters such as the Chernobyl and Fukushima nuclear accidents.²⁰⁷ In the former case, the reporting in the western press was

²⁰¹ Independent Investigation Commission on the Fukushima Nuclear Accident, *The Fukushima Daiichi Nuclear Power Station Disaster* (ed. M. K. Bricker) (New York: Routledge, 2014), 92–4.

²⁰² The five nuclear weapons states declared that they will voluntarily apply the Convention to all nuclear accidents, irrespective of origin: see Statements of Voluntary Application, reprinted in Sands, *Chernobyl*, 244–5. On 6 October 1986, shortly after the Notification Convention was opened for signature, the Soviet Union provided information about an accident onboard one of its nuclear-powered submarines (see *Independent*, 7 October 1987, 1).

²⁰³ IAEA Doc. INFCIRC/321, para. 3.5.

²⁰⁴ Declaration of 26 September 1986 of the Government of the People’s Republic of China to the 1986 IAEA Notification Convention.

²⁰⁵ IAEA Doc. INFCIRC/321, para. 4.5.1. See, more recently, IAEA efforts to develop new safety standards specifically focused on public communications in nuclear or radiological emergencies (www.iaea.org/newscenter/news/strengthening-public-communication-in-an-emergency-international-experts-develop-guidance-to-support-emergency-response).

²⁰⁶ Art. 7.

²⁰⁷ Following the Fukushima accident, the Japanese government was accused of withholding radiation data from the public and passed new secrecy laws to prevent the leaking of sensitive ‘national security’ information to journalists: see ‘Japan Approves New State Secrecy Bill to Combat Leaks’, BBC News, 26 November 2013, at www.bbc.com/news/world-asia-25102915

criticised by the former Soviet Union as being untruthful and creating mistrust, and the Soviet Union subsequently proposed that the spreading of untrue information could entail liability for states.²⁰⁸ The IAEA Secretariat noted the possibility of including in a new instrument 'an obligation to refrain from actions which might exacerbate the consequences of a nuclear accident'.²⁰⁹

Monitoring and Other Information Gathering

International environmental agreements often require information relevant to specific or general environmental obligations to be collected. The term most frequently used to describe that requirement is 'monitoring', although other terms that have been used include 'systematic observation', 'surveillance', 'inspection' and 'verification',²¹⁰ depending upon the precise activity that is envisaged. Monitoring can be carried out for a variety of purposes, of which the most usual include conducting research or identifying patterns and trends that reflect the state of the environment. Monitoring to ensure compliance with the objectives of an international treaty remains controversial because of the suggestion that a third party may become involved in the compliance process. Developing countries, particularly China, have also objected to attempts to impose international monitoring and transparency requirements as an infringement of their sovereignty.²¹¹ It is principally for such reasons that, with limited exceptions, inspection or verification by foreign states or international organisations remains relatively undeveloped in international environmental agreements.

Monitoring has been defined as the 'repeated measurement' of three separate, but related, factors:

- (a) the quality of the ... environment and each of its compartments ...
- (b) activities or natural and anthropogenic inputs which may affect the quality of the ... environment; [and]
- (c) the effects of such activities.²¹²

Under international arrangements, monitoring and other forms of information gathering are carried out by states individually or jointly, or by international organisations. Monitoring by

²⁰⁸ Soviet Union, Proposed Programme for Establishing an International Regime for the Safe Development of Nuclear Power, 25 September 1986, IAEA Doc. GC (SPL.1)/8.

²⁰⁹ IAEA Doc. GOV/INF/509, paras. 18–19. See also the 1953 Convention on the International Right of Correction, 435 UNTS 191; this Convention provides states directly affected by a report which they consider false or distorted, and which is disseminated by an information agency, with the possibility of securing commensurate publicity for its correction.

²¹⁰ Verification procedures, including inspection, relate more to the issue of compliance than general information gathering. They are specifically permitted for the purposes of compliance in relation to nuclear weapons treaties: e.g. the 1971 Nuclear Weapons Treaty. 'Verification' must not interfere with the activities of other parties and must be conducted 'with due regard for rights recognised under international law, including the freedoms of the high seas and the rights of coastal States' (Art. III(6)).

²¹¹ This issue was consistently raised by the Chinese delegation during the climate change negotiations and is reflected in the text of the 2015 Paris Agreement, which provides that the transparency framework established by Article 13, although including a requirement for technical expert review of parties' submitted information is to be 'implemented in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty, and avoid placing undue burden on Parties' (Art. 13(3)). See also E. Burleson, 'Climate Change Consensus: Emerging International Law', 34 *William and Mary Environmental Law and Policy Review* 543, 563 (2010).

²¹² 1992 OSPAR Convention, Annex IV, Art. 1.

international organisations for the purposes of research and the identification of trends and patterns is now a reasonably well-developed practice, with several international arrangements currently in operation. UNEP runs Earthwatch, a programme developed by the Stockholm Conference to provide a continuous assessment of the global environment. The mission statement for Earthwatch, agreed in 1994, states that its role is 'to coordinate, harmonize and integrate observing, assessment and reporting activities across the UN system in order to provide environmental and appropriate socio-economic information for national and international decision-making on sustainable development and for early warning of emerging problems requiring international action. This should include timely information on the pressures on, status of and trends in key global resources, variables and processes in both natural and human systems and on the response to problems in these areas.'²¹³ An important component of Earthwatch is the Global Environment Monitoring System (GEMS Water), which is responsible for monitoring of freshwater systems. UNEP also runs the International Environmental Information System (INFO-TERRA), a global network of national information centres for the exchange of environmental information. The Global Observing Systems consist of three interrelated systems to observe the global environment operating under the auspices of UN organisations: the Global Climate Observing System; the Global Ocean Observing System; and the Global Territorial Observing System.²¹⁴

Treaty Arrangements

Treaty arrangements require parties to carry out a range of monitoring and related activities. Treaty obligations are particularly developed for the Antarctic region, the marine environment, and freshwater resources. The 1959 Antarctic Treaty allows inspections by consultative parties of all areas of Antarctica, and rights of aerial observation.²¹⁵ The 1972 London Convention and its 1996 Protocol require each party to designate an appropriate authority to monitor the condition of the seas for the purposes of the Convention and Protocol.²¹⁶ Other treaties require the monitoring of concentrations of controlled substances²¹⁷ and levels of marine pollution,²¹⁸ and similar provision exists under UNEP Regional Seas Conventions.²¹⁹ Under the 1982 UNCLOS, states should 'observe, measure, evaluate and analyse' the risks or effects of pollution of the marine environment, and 'keep under surveillance the effects of any activities which they permit or in which they engage in order to determine whether these activities are likely to pollute the marine environment'.²²⁰ The 1992 OSPAR Convention requires the parties to undertake and publish joint assessments of the quality status of the marine environment, including an evaluation of the effectiveness of the measures taken and planned and an identification of priorities for action.²²¹ Under the 1992 Watercourses Convention, riparian parties must implement joint

²¹³ www.un.org/earthwatch/about/about.html; see L. K. Caldwell, *International Environmental Policy* (Durham, NC/London: Duke University Press, 1990, 2nd edn), 75–6.

²¹⁴ See www.un.org/earthwatch/data/g3os.html#Global%20Climate%20Observing. See also WMO, *World Weather Watch: Twenty-Second Status Report on Implementation* (2005).

²¹⁵ Art. VII. See also the provisions on observation and inspection established by the 1980 CCAMLR, Art. XXIV; 1988 CRAMRA, Arts. 11 and 12; and 1991 Antarctic Environment Protocol, Art. 14.

²¹⁶ 1972 London Convention, Art. VI(1)(d); 1996 Protocol to the London Convention, Art. 9(3).

²¹⁷ 1976 Rhine Chemical Pollution Convention, Art. 10(1). ²¹⁸ 1974 Paris LBS Convention, Art. 11.

²¹⁹ 1976 Barcelona Convention, Art. 10; 1978 Kuwait Convention, Art. X; 2002 Antigua Convention, Arts. 9, 11(1) and 12(2); 2010 Nairobi Convention, Art. 15.

²²⁰ Art. 204(1) and (2). ²²¹ Art. 6 and Annex IV.

programmes for monitoring the conditions of transboundary waters, as well as the assessment of the conditions and the effectiveness of implementing measures.²²²

In relation to air quality, the 1979 LRTAP Convention established a 'co-operative programme for the monitoring and evaluation of the long-range transmission of air pollutants in Europe' (known as EMEP);²²³ the 1985 Vienna Convention requires parties to undertake 'systematic observation' of the state of the ozone layer and other relevant parameters;²²⁴ and the 1992 Climate Change Convention commits all parties to develop and periodically update national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and promote and cooperate in systematic observation.²²⁵ Participants in the 1997 Kyoto Protocol's Clean Development Mechanism are required to monitor levels of greenhouse gas emissions related to clean development projects in order to calculate the proper emission reductions credits to be issued to the party.²²⁶

Monitoring or its equivalent is also required for biological diversity. Examples include the 1946 International Whaling Convention, which provides for inspection of whaling ships and the measuring of whales,²²⁷ and the 1992 Biodiversity Convention, which requires all parties to identify and monitor the components of biological diversity and the processes and categories of activities which are likely to have significant adverse impacts on the conservation and sustainable use of biodiversity.²²⁸ Other environmental treaties provide for monitoring or inspection of record books in relation to the carriage of oil;²²⁹ certification for the carriage by sea of hazardous substances,²³⁰ imported species and goods,²³¹ the health of workers,²³² the air quality of the working environment,²³³ the possible discharge by a ship of any harmful substances;²³⁴ levels of mercury and mercury compounds in vulnerable populations and environmental media;²³⁵ and fisheries conservation levels.²³⁶ In certain circumstances, UNCLOS allows the physical inspection of foreign vessels,²³⁷ and the 1974 Nordic Environment Convention is probably unique in allowing for the supervisory authorities of one state to carry out on-site inspections to determine damage caused by their environmentally harmful activities in another state.²³⁸ Under the 1995 Fish Stocks Agreement, states must ensure that fishing vessels flying their flag provide the information necessary to fulfil their obligations under the Agreement, and shall 'collect and exchange scientific, technical and statistical data with respect to fisheries for straddling fish stocks and highly migratory fish stocks', as well as ensuring that data are collected in sufficient detail to facilitate effective stock assessment and are provided in a timely manner to fulfil the requirements of subregional or regional fisheries management organisations or arrangements.²³⁹

²²² Art. 11. ²²³ Art. 9 and 1984 EMEP Protocol. ²²⁴ Arts. 2(2)(a) and 3(2) and Annex I.

²²⁵ Arts. 4(1)(a) and (g) and 5. This obligation is augmented by Art. 5 of the 1997 Kyoto Protocol that requires Annex I parties to establish national systems for the estimation of greenhouse gas emissions by sources and removals by sinks. It also states that, where agreed methodologies (namely the revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, see Decision 2/CP.3) are not used to estimate emissions and removals, appropriate 'adjustments' should be applied. See also 2015 Paris Agreement, Art. 13.

²²⁶ Decision 3/CMP.1. ²²⁷ Schedule, Section V. ²²⁸ Art. 7(b) and (c).

²²⁹ 1954 Oil Pollution Convention, Art. IX(5). ²³⁰ MARPOL 73/78, Art. 5(2).

²³¹ 1956 Plant Protection Agreement for the South East Asia and Pacific Region, Arts. III and V; 1970 Benelux Birds Convention, Art. 10.

²³² 1960 ILO Ionising Radiations Convention, Art. 11; 1981 ILO Occupational Safety Convention, Art. 9.

²³³ 1986 ILO Asbestos Convention, Art. 20. ²³⁴ MARPOL 73/78, Art. 6(2).

²³⁵ 2013 Minamata Mercury Convention, Art. 19(1). ²³⁶ 1978 Northwest Atlantic Fisheries Convention, Art. XI(4).

²³⁷ Art. 226(1). On inspection, see also the 1995 Fish Stocks Agreement, Arts. 21 and 22. ²³⁸ Art. 10.

²³⁹ Art. 14 and Annex 1 (standard requirements for collection and sharing of data).

Few international organisations are granted independent monitoring or other information gathering powers by treaty. Some organisations may conduct factual investigations,²⁴⁰ while other treaties merely permit the relevant international organisation to be entrusted with surveillance functions²⁴¹ or to prepare a document summarising the result of national monitoring efforts.²⁴² Regulatory committees established under the 1988 CRAMRA (not in force) would be required to monitor the compliance of operators with Management Schemes.²⁴³

A rare exception is the 1997 Kyoto Protocol, which pursuant to implementing rules adopted by the Protocol's Meeting of the Parties, established two separate independent monitoring bodies each with powers of oversight of the parties to the Protocol. The first body is an expert review team which conducts reviews of each party's calculations of its assigned amount of greenhouse gas emissions and the party's various emissions credits, and also undertakes in-country reviews and desk reviews of each party's national registry.²⁴⁴ Areas of non-compliance identified in expert review team reports may lead to activation of the Protocol's non-compliance mechanism. The second body, the Enforcement Branch of the Compliance Committee, forms part of the non-compliance mechanism and is responsible for determining whether each Annex I country is in compliance with its quantified emissions limitation or reduction commitment, as well as with certain methodological and eligibility requirements set up under the Protocol.²⁴⁵ The 2015 Paris Agreement continues the Protocol's processes of technical expert review,²⁴⁶ but contemplates a softer non-compliance mechanism that shall be 'facilitative in nature and function in a manner that is transparent, non-adversarial and non-punitive.'²⁴⁷

While monitoring by international organisations or other expert bodies for the purposes of treaty compliance remains uncommon, an increasing number of treaties establish an ongoing role for scientific or technical advisory bodies in monitoring more general implementation issues, including the adequacy of existing regulations in light of current scientific knowledge.²⁴⁸ Early examples were the Animals and Plants Committees established under the 1973 CITES, which provide scientific and technical guidance to the Conference of the Parties, undertake periodic reviews of species to ensure they are appropriately categorised in CITES Appendices, and advise when listed species are subject to unsustainable trade and recommend remedial action.²⁴⁹ Other examples include the Assessment Panels established under the 1987 Montreal Protocol,²⁵⁰ and the respective scientific subsidiary bodies set up under the 1992 Convention on Biological Diversity and the 1992 Climate Change Convention.²⁵¹

²⁴⁰ See e.g. the Inter-American Tropical Tuna Commission, which is required to investigate the abundance, biology, biometry and ecology of certain tunas: 1949 Inter-American Tropical Tuna Convention, Art. II(1). See now 2003 Antigua Convention, Art. VII(1)(a).

²⁴¹ See e.g. 1962 African Migratory Locust Convention, Art. 4(4).

²⁴² 1976 Rhine Chemical Pollution Convention, Art. 10(3). ²⁴³ Art. 52. ²⁴⁴ Decision 22/CMP.1.

²⁴⁵ Decision 24/CP.7 Annex, Part V.4. ²⁴⁶ Art. 13(11) and (12). ²⁴⁷ Art. 15(2).

²⁴⁸ See generally S. Andresen and J. B. Skjaereth, 'Science and Technology', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), ch. 9.

²⁴⁹ Conf. 11.1 (Rev. CoP14), Annex 2.

²⁵⁰ Technology and Economic Assessment Panel (TEAP), Scientific Assessment Panel (SAP) and Environmental Effects Assessment Panel (EEAP).

²⁵¹ Subsidiary Body for Scientific, Technical and Technological Advice (SBSTTA); Subsidiary Body for Scientific and Technological Advice (SBSTA).

Access to Environmental Information and Public Participation

The duty to provide – and the right to obtain – access to information on the environment, whether to the public at large or to specific categories of persons (such as workers), is a relatively recent, but now firmly entrenched, development in international law. The right is closely connected to participation rights in environmental impact assessment procedures and decision-making processes and with the development of procedural rights in human rights law,²⁵² and goes further than obligations to ensure public awareness, education or publicity (discussed in the following section). Access to environmental information and public participation were recognised as important components of sustainable development in Principle 10 of the Rio Declaration, which provides that:

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes.²⁵³

The Rio Declaration is silent as to what information will be considered ‘appropriate’, although some guidance may be found in Agenda 21, which provides that ‘individuals, groups and organisations should have access to information relevant to environment and development held by national authorities, including information on products and activities that have or are likely to have a significant impact on the environment, and information on environmental protection measures’.²⁵⁴

Some early treaties sought to ensure that information on hazardous substances was made available to workers. The 1985 ILO Occupational Health Services Convention does not create a right of access in so many words, but provides that ‘all workers shall be informed of health hazards involved in their work’.²⁵⁵ The 1986 Asbestos Convention goes further by providing, without apparent qualification, that workers, their representatives and inspection services ‘shall have access’ to records of the monitoring of the working environment and of the exposure of workers to asbestos.²⁵⁶ The 1992 OSPAR Convention, and the Council of Europe’s 1993 Civil Liability Convention (not in force) were the first instruments to elaborate in detail the modalities for giving effect to the right of persons to access to information on the environment. The right is also recognised, in relation to activities which may affect the public, in Article 12 of the ILC’s draft Articles on Prevention of Transboundary Harm.

²⁵² On access to information and participation rights in human rights law, see *Guerra v. Italy* (1998) 26 EHRR 357; *Tatar v. Romania*, App. No. 67021/01, 27 January 2009 (European Court of Human Rights); *Brândușe v. Romania* App. No. 6586/03, 7 April 2009 (European Court of Human Rights); *Miguel Ignacio Fredes Gonzales and Andrea Tuzcek Fries v. Chile* (Admissibility Decision), Report No. 14/09 19 March 2009 (IACtHR). See further Chapter 17; S. Weber, ‘Environmental Information and the European Convention on Human Rights’, 12 *Human Rights Law Journal* 177 (1991).

²⁵³ See also WSSD Plan of Implementation, para. 24(b); and OECD Council Decision/Recommendation, Provision of Information to Public and Public Participation in Decision-Making Processes Related to Prevention of, and Response to, Accidents Involving Hazardous Substances, 8 July 1988, OECD C(88)85, 28 ILM 277 (1989); 1998 Recommendation on Environmental Information, C(98)67; and 2010 Recommendation on Information and Communication Technologies and the Environment, C(2010)61.

²⁵⁴ Agenda 21, para. 23.2. ²⁵⁵ Art. 13. ²⁵⁶ Art. 20.

The right was extended – both geographically and substantively – by the 1998 Aarhus Convention, as well as its subsequent amendment and 2003 Protocol on Pollutant Release and Transfer Registers. International organisations, such as the World Bank, have also responded to calls for greater transparency and openness, promulgating policies such as the Bank’s Policy on Access to Information.²⁵⁷

In each instrument, the existence and exercise of a right to access information is subject to certain limitations, reflecting a reluctance on the part of states to allow unlimited access to environmental information. This is evident in the two treaties adopted shortly after the Chernobyl accident: the 1986 IAEA Notification Convention, which failed to provide citizens with any right of access to environmental information, and the 1986 IAEA Assistance Convention, which provided that an assisting party must make every effort to coordinate with the requesting state before releasing information to the public on the assistance provided in connection with a nuclear accident.²⁵⁸ Other treaties, such as the 1992 Industrial Accidents Convention, create a positive obligation on parties to provide information to the public rather than creating a citizen’s right of access to information.²⁵⁹ The 1992 Climate Change Convention does not create a public right of access to information, although it requires information communicated by the parties to be made ‘publicly available’ at the time it is submitted to the Conference of the Parties once it has been made available to bodies involved in communication and review of information.²⁶⁰ The dissemination of this information is subject to limitations on grounds of confidentiality in accordance with criteria established by the Conference of the Parties.²⁶¹ Confidentiality provisions are also a feature of more recent instruments, such as the 2003 Protocol to the Aarhus Convention on Pollutant Release and Transfer Registers.²⁶²

1992 OSPAR Convention

The 1992 OSPAR Convention was the first international treaty to provide specific rules on the right of access to environmental information.²⁶³ Its inspiration in this regard was the 1990 EC Directive on Freedom of Access to Environmental Information, since replaced by a 2003 Directive on the same topic.²⁶⁴ Article 9 of the 1992 OSPAR Convention requires the competent authorities of the parties to make available to any legal or natural person

²⁵⁷ World Bank, Access to Information Policy, 1 July 2015, <https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=3693>

²⁵⁸ Art. 6(2).

²⁵⁹ Art. 9 and Annex VIII; see also 1991 Espoo Convention, Art. 3(8), 2003 Antigua Convention, Art. XVI(1)(a) and 2013 Minamata Mercury Convention, Art. 18(1).

²⁶⁰ Art. 12(9) and (10). See also Code of Practice for the Treatment of Confidential Information in the Technical Review of Greenhouse Gas Inventories from Parties Included in Annex I to the Convention, FCCC/CP/2003/6/Add.1.

²⁶¹ Art. 12(9).

²⁶² Art. 12 (allowing parties to authorise their competent authorities to keep information held on a pollutant register confidential for various reasons including in cases where disclosure would adversely affect national security or intellectual property rights).

²⁶³ Another early treaty was the 1993 Lugano Civil Liability Convention, Chapter III of which was entitled ‘Access to Information’ and included provisions entitling persons to have access to environmental information held by public authorities without having to prove an interest, subject to certain exceptions including those pertaining to confidentiality and public security. This treaty never entered into force.

²⁶⁴ Directive 2003/4/EC, in force 14 February 2003. For discussion of the 1990 EC Directive and its contribution to subsequent international law in this area, see the second edition of this text, at pp. 807–13.

any available information in written, visual, aural or data-base form on the state of the maritime area, on activities or measures adversely affecting or likely to affect it and on activities or measures introduced in accordance with the Convention.²⁶⁵

The information must be provided in response to any reasonable request, without the person seeking the information having to prove an interest, without unreasonable charges, and as soon as possible and at the latest within two months.²⁶⁶ However, certain limitations apply: requests for information may be refused 'in accordance with their national legal systems and applicable international regulations' where the information affects, *inter alia*, the confidentiality of proceedings of public authorities, international relations and national defence, public security, matters which are *sub judice* or under enquiry, commercial and industrial confidentiality (including intellectual property), and the confidentiality of personal data or files.²⁶⁷

In June 2001, Ireland instituted arbitration proceedings (under Article 32 of the OSPAR Convention) against the United Kingdom seeking access to information which had been redacted from two independent reports related to the authorisation of the MOX nuclear plant at Sellafield. The two reports had been commissioned by the UK government to assess the 'economic justification' of the plant, as required by EURATOM law, but the government only put into the public domain versions that omitted large amounts of information relating to the operation and costs of the plant. Ireland requested access to the information under Article 9 of the OSPAR Convention. The United Kingdom refused to provide the information, on the grounds that it did not constitute information within the meaning of Article 9(1), or, alternatively, that, if it was such information, the United Kingdom was entitled to rely on the 'commercial confidentiality' exception to refuse disclosure. Further, in the course of its pleadings, the United Kingdom argued that Ireland was not entitled to rely on Article 9 of the Convention, which only required parties to put in place domestic arrangements to ensure access to information but did not entitle another party to bring an international claim premised on a right of access to information.

The arbitral tribunal gave its award in July 2002.²⁶⁸ The tribunal unanimously rejected the UK's arguments that the tribunal lacked jurisdiction and that Ireland's claims were inadmissible, and by a two-to-one majority rejected the UK's submission that the implementation of Article 9 (1) was assigned exclusively to the competent authorities in the UK and not to a tribunal established under UNCLOS. But by a different two-to-one majority the tribunal found that Ireland's claim did not fall within Article 9(2), on the ground that Ireland had not demonstrated that the categories of redacted information 'insofar as they may be taken to be activities or measures with respect to the commissioning and operation of a MOX Plant at Sellafield, are "information . . . on the state of the maritime area" or, even if they were, are likely adversely to affect the maritime area'.²⁶⁹ The dissenting opinion of Griffiths objected to the majority's approach on the grounds that it failed to address 'the admitted environmental harm to the marine environment of the Irish Sea, as well as the fact that Article 9(2) only speaks of the likelihood of adverse effects'; the burden of proof lay with the UK, in accordance with the

²⁶⁵ Art. 9(2). ²⁶⁶ Art. 9(1). ²⁶⁷ Art. 9(3). The reasons for a refusal must be given (Art. 9(4)).

²⁶⁸ Dispute Concerning Access to Information under Article 9 of the OSPAR Convention, Permanent Court of Arbitration, 2 July 2003 (2003) XXIII RIAA 59; (2003) 42 ILM 1118.

²⁶⁹ Award, para. 179.

precautionary principle; the majority conclusion appeared to be unfounded since no evidence was presented in support of its finding; and the available material militated in favour of the conclusion that the probability of adverse effect might be demonstrated.²⁷⁰ The majority's textual and 'acontextual' approach suggests that environmental considerations – including international legal developments which have occurred since the 1980s – had not permeated the reasoning processes of established international lawyers, which were formed in a pre-environmental period.

1998 Aarhus Convention

The 1998 Aarhus Convention is built on three pillars: access to information; public participation in environmental decision-making; and access to justice in environmental matters. On environmental information, the Convention introduces several innovations which clarify – or develop, depending upon one's perspective – the approaches reflected in Article 9 of the 1992 OSPAR Convention, which it generally follows. The 1998 Aarhus Convention obliges parties to ensure that public authorities make available to the public 'environmental information' (subject to certain exceptions) without any interest having to be stated, generally in the form requested, and without an unreasonable charge being made.²⁷¹ The definition of environmental information is broader than earlier instruments, making express reference, for example, to factors of biodiversity such as genetically modified organisms (GMOs), and a broad range of measures (such as environmental agreements, policies, plans and programmes and cost-benefit and other economic analyses and assumptions used in environmental decision-making).²⁷² The time available for responding to requests is reduced to one month, and the exceptions are to be interpreted in a restrictive way and have been tightened (for example, the commercial confidentiality exception may only be applied where 'legitimate economic interests' need to be protected, and a presumption is established in favour of disclosing information on emissions which is relevant for the protection of the environment).²⁷³ A refusal to disclose information is subject to the Convention provisions on access to review.²⁷⁴ The Convention also imposes a positive obligation on a public authority that does not hold the information to inform the applicant where it might be applied for, and makes provision for the separation of information that would be exempted from disclosure so that the remainder may be disclosed.²⁷⁵

Article 5 of the Convention imposes a range of positive (and innovative) obligations on parties, beginning with the requirement that public authorities 'possess and update' environmental information relevant to their functions, and to establish mandatory systems to ensure an adequate flow of information to public authorities about activities that may significantly affect the environment.²⁷⁶ In the event of any imminent threat to human health or the environment (from any source), public authorities are also required immediately to disseminate all information that could enable the public to take measures to prevent or mitigate the harm arising from the threat.²⁷⁷ Parties are also required to ensure that public authorities make environmental information available to the public in transparent and accessible ways, to ensure that such information progressively becomes available in electronic databases, to publish (at least every four years) a national report on the state of the environment, and to take measures to disseminate

²⁷⁰ Dissenting Opinion, para. 92. ²⁷¹ Art. 4(1) and (8). ²⁷² Art. 2(3). ²⁷³ Art. 4(2), (3)(c) and (4).
²⁷⁴ Arts. 4(7) and 9; see Chapter 5, p. 149. ²⁷⁵ Art. 4(5) and (6). ²⁷⁶ Art. 5(1)(a) and (b). ²⁷⁷ Art. 5(1)(c).

national and international legislation and measures, including treaties.²⁷⁸ The private sector is also targeted, although via the state:

[Parties] shall encourage operators whose activities have a significant impact on the environment to inform the public regularly of the environmental impact of their activities and products, where appropriate within the framework of voluntary eco-labelling or eco-auditing schemes or by other means.²⁷⁹

Finally, each party must take steps to establish progressively a ‘coherent, nationwide system of pollution inventories or registers on a structured, computerized and publicly accessible data-base’.²⁸⁰ In 2003, the parties concluded a Protocol to the Convention fleshing out the detail of this obligation and the nature of the pollutant registers required (discussed below).

The broad right of access to information established by the Aarhus Convention is coupled with requirements for facilitating public participation in environmental decision-making and access to justice in environmental cases. Article 6 requires parties to inform the public concerned – early in the decision-making process – of proposed activities listed in Annex I to the Convention and other activities that may have a significant effect on the environment, and to ensure early public participation in decision-making.²⁸¹ Apart from access to information, the right to participate includes: the right to submit comments, information, analyses or opinions considered relevant; the requirement that account is taken of the outcome of the public participation; and the requirement to inform the public of the decision.²⁸² These rights apply equally in respect of the reconsideration or updating of operating conditions.²⁸³ Article 7 obliges parties to enable the public to participate in the preparation of plans and programmes relating to the environment within a ‘transparent and fair framework’. Article 8 requires parties to ‘strive to promote’ public participation during the preparation of executive regulations and other generally applicable, legally binding rules that may have a significant effect on the environment.

Article 9 governs access to justice. In respect of violations of the right to environmental information, parties must provide access to remedies before a court or other independent and impartial body established by law.²⁸⁴ In respect of decisions, acts or omissions subject to Article 6, parties must ensure that a member of the public having a sufficient interest or maintaining impairment of a right has access to a review procedure or a court of law or other independent and impartial body established by law to challenge its substantive and procedural legality.²⁸⁵ The Convention provides that ‘sufficient interest’ and ‘impairment of a right’ are to be determined in accordance with national law and are to be consistent with the objective of giving the public concerned wide access to justice, and that non-governmental organisations meeting certain requirements will be deemed to have a sufficient interest.²⁸⁶ In respect of decisions, acts or

²⁷⁸ Art. 5(2)-(4). ²⁷⁹ Art. 5(6); see also Art. 5(7). ²⁸⁰ Art. 5(9). ²⁸¹ Art. 6(1)-(4). ²⁸² Art. 6(5)-(9).

²⁸³ Art. 6(10).

²⁸⁴ Art. 9(1). Where a party provides for review by a court, it must also ensure that a person has access to ‘an expeditious procedure established by law that is free of charge or inexpensive for reconsideration by a public authority or an independent and impartial body other than a court’ (*ibid.*).

²⁸⁵ Art. 9(2).

²⁸⁶ *Ibid.* (The rule is without prejudice to any ‘preliminary review procedure’ which may exist under national law.) Art. 2(5) defines the requirements to be met by NGOs: to promote environmental protection and meet any requirements under national law.

omissions subject to other relevant provisions of the Convention (namely Articles 7 and 8), the matter is governed by national law.²⁸⁷ Further, in accordance with criteria (if any) laid down in national law, members of the public are to have access to administrative or judicial procedures to challenge acts or omissions by private persons and public authorities that contravene national law relating to the environment.²⁸⁸ All of the procedures are to provide adequate and effective remedies, including injunctive relief (as appropriate), and must be fair, equitable, timely and not prohibitively expensive.²⁸⁹

In 2005, the second Meeting of the Parties to the Convention adopted an amendment designed to develop its application to decisions on permitting the deliberate environmental release of GMOs. This amendment (which has not yet entered into force) goes further than other treaties in establishing a right and modalities for public participation prior to the making of such decisions.²⁹⁰ The amendment would insert into the Convention a new Article 6*bis* requiring parties to provide 'for early and effective information and public participation prior to making decisions on whether to permit the deliberate release into the environment and placing on the market of genetically modified organisms'. Annex *Ibis* details the measures parties must lay down in their respective regulatory frameworks to enable 'effective information and public participation', including provision of a reasonable time frame for public comment and submissions on proposed decisions, making available relevant documentation including any environmental risk assessment, ensuring transparency of decision-making processes and providing reasons for decisions, and provision of access to procedural information to the public.²⁹¹ While these techniques reflect best practice in regards to enabling public participation, parties are only subject to a soft obligation to 'endeavour to ensure' that decisions on the environmental release of GMOs take 'due account' of public views.²⁹² Moreover, parties are permitted to include exceptions to public participation in their regulatory frameworks,²⁹³ and to apply confidentiality requirements,²⁹⁴ that may limit the practical significance of the participation right.

2003 Protocol on Pollutant Release and Transfer Registers

Another attempt to develop the participatory rights established by the Aarhus Convention is reflected in its 2003 Protocol on Pollutant Release and Transfer Registers, which entered into

²⁸⁷ *Ibid.* ²⁸⁸ Art. 9(3).

²⁸⁹ Art. 9(4). Parties must also consider the establishment of appropriate assistance mechanisms to remove or reduce financial and other barriers to access to justice (Art. 9(5)).

²⁹⁰ To enter into force, the amendment must be ratified by twenty-seven of the thirty-five parties that were party to the Convention at the time the amendment was adopted. To date, the amendment has been ratified by thirty parties, twenty-four of which were party to the Convention at the time the amendment was adopted. A further three ratifications are required from those parties who were party to the Convention at the time the amendment was adopted in order for the amendment to enter into force. The following were party to the Convention at the time the amendment was adopted but are yet to ratify the amendment: Albania, Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Malta, Tajikistan, the former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine.

²⁹¹ Decision II/1, 25–27 May 2005, Almaty, not in force, Annex *Ibis*, paras. 1, 3, 5 and 6. ²⁹² Annex *Ibis*, para. 7.

²⁹³ Annex *Ibis*, para. 2. These exceptions are limited to situations where a GMO release under comparable biogeographical conditions has already been approved within the party's regulatory framework or sufficient experience has previously been gained with release of the GMO in question in comparable ecosystems. For GMOs proposed for marketing approval, exceptions may be applied if the GMO was already approved within the party's regulatory framework or if it is intended for research or culture collections.

²⁹⁴ Annex *Ibis*, para. 3. However, para. 4 provides that parties cannot designate as confidential certain generic details about the GMO, the methods and plans for monitoring the GMO and emergency response, or the environmental risk assessment.

force on 8 October 2009.²⁹⁵ The Protocol was heralded as establishing 'a new international benchmark in securing public access to information on threats posed to our environment by toxic emissions'.²⁹⁶ It requires parties to establish and maintain public accessible national pollutant release and transfer registers as a means of enhancing public access to information, which in turn could facilitate public participation in environmental decision-making and contribute to the prevention and reduction of environmental pollution.²⁹⁷ The idea of a pollutant register builds on the tradition of 'community right to know' legislation prominent in some OECD countries, which seeks to improve corporate accountability and environmental performance by making data on pollutant releases publicly available.²⁹⁸ In 1996, the OECD Council adopted a Recommendation on Implementing Pollutant Release and Transfer Registers, which called on member countries to establish such schemes.²⁹⁹ In 2002, as part of the goal of promoting sound management of chemicals throughout their life cycle, the WSSD Plan of Implementation encouraged the 'development of coherent and integrated information on chemicals, such as through national pollutant release and transfer registers'.³⁰⁰

The concepts of 'pollutant', 'release' and 'off-site transfer' are broadly defined in the Protocol: 'pollutant' encompasses any 'substance or group of substances that may be harmful to the environment or to human health on account of its properties and of its introduction into the environment'; a 'release' refers to 'any introduction of pollutants into the environment as a result of any human activity, whether deliberate or accidental, routine or non-routine', and includes spills, emissions, discharges, injections, disposal or dumping, or releases through sewer systems without final wastewater treatment; and 'off-site transfer' means the movement beyond the boundaries of a facility of either pollutants or waste destined for disposal or recovery, and of pollutants in wastewater destined for wastewater treatment.³⁰¹

Article 4 specifies certain core requirements for national pollutant release and transfer registers established by parties.³⁰² Each national register must contain information that (a) is facility-specific with respect to reporting on pollution point sources; (b) accommodates reporting on diffuse sources of pollution; (c) is pollutant-specific or waste-specific, as appropriate; (d) is multimedia in nature, distinguishing among releases to air, land and water; (e) includes information on off-site transfers of pollutants or waste; (f) is based on mandatory reporting on a periodic basis; (g) includes standardised and timely data; (h) is coherent and designed to be user-friendly and public accessible (such as an electronic database) and (i) is a structured, computerised database or several linked databases maintained by a designated competent authority of the

²⁹⁵ Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Kiev, 21 May 2003, in force 8 October 2009, Doc. MP.PP/2003/1.

²⁹⁶ Address by Ján Kubiš, UNECE Executive Secretary to the first Meeting of the Parties, 23 April 2010, ECE/ENV/10/P15.

²⁹⁷ Art. 1.

²⁹⁸ N. Gunningham and A. Cornwall, 'Legislating the Right to Know', 11(4) *Environmental and Planning Law Journal* 274 (1994).

²⁹⁹ OECD Recommendation on Implementing Pollutant Release and Transfer Registers (PRTRs), of 20 February 1996, C/(96)41/Final, as amended by C(2003)87 on 28 May 2003.

³⁰⁰ WSSD Plan of Implementation, para. 23(f). ³⁰¹ Art. 2(6)-(8).

³⁰² The requirements specified by the Protocol are minimum requirements. Parties are free to include additional pollutants and facilities, and the parties to the Protocol are required to work towards convergence between their respective registers: reference from Protocol (Art. 3(2) and (6)).

party.³⁰³ In the implementation of the Protocol, parties are also under a general obligation to 'be guided by the precautionary approach as set forth in Principle 15 of the 1992 Rio Declaration on Environment and Development'.³⁰⁴

As an initial matter, the scope of registers is limited to particular pollutants or wastes released or transferred by specified activities. These activities are listed in Annex I to the Protocol, and include energy sector activities such as oil refineries and thermal power stations, metal processing facilities, mining, chemical installations, waste and wastewater treatment facilities, pulp and wood processing facilities, intensive livestock production and aquaculture, slaughterhouses, tanneries and other industrial activities. Companies in these sectors are required to report annually, and on a facility-specific basis, on emissions to the environment and transfers to other facilities. Covered pollutants are specified in Annex II, as well as the relevant thresholds for releases that trigger a reporting requirement. These substances include a range of heavy metals, persistent organic pollutants (POPs), pesticides and hazardous chemicals, acid rain pollutants, ozone-depleting substances and greenhouse gases. In some cases, different reporting thresholds are specified depending on whether a release is made to air, water or to land, or involves an off-site transfer. An attempt was also made to capture diffuse source pollutant releases (for example, from agriculture or transport), a traditionally elusive area of pollution regulation.³⁰⁵ Accordingly, each party must present on its register, in adequate spatial disaggregation, the information on releases of pollutants from diffuse sources for which the party determines that data are being collected by the relevant authorities and that can be practicably included.³⁰⁶ The Meeting of the Parties under the Protocol is to review the reporting requirements in light of the experience gained with implementation over time and consider whether revisions are required to the activities specified in Annex I or the pollutants and thresholds specified in Annex II, as well as whether any other aspects should be included such as more specific requirements for diffuse sources or the development of criteria for adding new pollutants.³⁰⁷

Each party is to enable public access to the information contained in its pollutant release and transfer register, primarily by ensuring that its register provides for direct electronic access through internet or other telecommunications facilities.³⁰⁸ Members of the public, including environmental organisations or groups,³⁰⁹ do not need to state an interest in the information in order to obtain access.³¹⁰ Any person who considers that an information request has been ignored, wrongfully refused or inadequately answered must be given access to a review procedure before a court or another independent and impartial body.³¹¹ Each party is also to ensure appropriate opportunities for public participation in the development and modification of its national register, within the framework of its national law, by allowing the submission

³⁰³ Art. 4. ³⁰⁴ Art. 3(4).

³⁰⁵ N. Gunningham and D. Sinclair, 'Policy Instrument Choice and Diffuse Source Pollution', 17(1) *Journal of Environmental Law* 51 (2005).

³⁰⁶ Art. 7(7). Parties must include information on the type of methodology used to derive the information.

³⁰⁷ Art. 6(2).

³⁰⁸ Art. 11(1). Where direct electronic means are not available, a party shall ensure that its competent authority upon request provides the information by another effective means at the latest within one month after submission of the request (Art. 11(2)).

³⁰⁹ Art. 2(3). The 'public' only encompasses such groups and organisations 'in accordance with national legislation or practice'.

³¹⁰ Art. 11(1). ³¹¹ Art. 14.

of relevant comments, information, analyses or opinions. Due account must be taken of such public input.³¹²

These broader information and participation rights sit alongside now conventional provisions allowing for the non-disclosure of information on confidentiality grounds. Pursuant to Article 12 of the Protocol, each party may authorise its designated competent authority to keep information held on the register confidential on a number of grounds including considerations of national defence or public security, commercial and industrial confidentiality and intellectual property rights.³¹³ The breadth of this potential exemption is limited somewhat by the instruction that 'grounds for confidentiality shall be interpreted in a restrictive way, taking into account the public interest served by disclosure and whether the information relates to releases into the environment'.³¹⁴

Implementation of the Protocol is subject to review by the Meeting of the Parties. At its first session in 2010, the Meeting of the Parties adopted a number of important decisions, including provisions for the establishment and operation of a compliance mechanism under the Protocol.³¹⁵ Currently, the majority of the Protocol's thirty-five parties are European countries with well-developed economies; however, the Protocol is open to accession by states from outside the United Nations Economic Commission for Europe (UNECE) region and to states which are not party to the Aarhus Convention, giving it potentially global scope. If the Protocol is to extend its reach to other, less developed parts of the world (where the health and environmental risks posed by pollutant releases are often more acute), close observance of the Protocol's provisions regarding capacity-building and international cooperation will be vital.³¹⁶

Public Education and Awareness

A number of international environmental agreements include positive obligations requiring states to improve public education and awareness on environmental matters and give due publicity to matters of environmental importance. Principle 10 of the Rio Declaration synthesises commitments adopted in a number of international treaties. It recognises the importance of public education and provides that 'states shall facilitate and encourage public awareness and participation by making information widely available'. Chapter 36 ('Promoting Education, Public Awareness and Training') of Agenda 21 elaborated upon Principle 10, and established three programme areas: reorienting education towards sustainable development; increasing public awareness; and promoting training.³¹⁷ Article 5 of the 1998 Aarhus Convention, together with its 2003 Protocol – described above – goes far in this regard.

Several treaties include provisions on public awareness, education and publicity. One of the earliest was the 1987 Montreal Protocol, which calls on parties to cooperate in 'promoting public awareness of the environmental effects of the emissions of controlled substances and other substances that deplete the ozone layer'.³¹⁸ Similar provisions are repeated in subsequent global

³¹² Art. 13. ³¹³ Art. 12(1)(a), (c) and (d). ³¹⁴ Art. 12(1).

³¹⁵ Decision I/2 on the review of compliance (ECE/MP.PRTR/2010/2/Add.1). For details of the composition and operation of the Compliance Committee, see www.unece.org/env/pp/prtr-cc.html

³¹⁶ Arts. 15 and 16.

³¹⁷ See also the WSSD Plan of Implementation, including paras. 15(d), 19(m) (energy sources and technologies for sustainable development) and 41(b) (eco-tourism).

³¹⁸ Art. 9(2).

instruments.³¹⁹ Education and training are also addressed with increasing frequency,³²⁰ particularly in relation to instruments addressing the protection of workers,³²¹ and in human rights treaties. For instance, the 1989 Convention on the Rights of the Child specifies that education should include ‘development of respect for the natural environment’.³²² The 2000 Biosafety Protocol requires parties to promote public awareness, education and participation ‘concerning the safe transfer, handling and use of living modified organisms in relation to the conservation and sustainable use of biological diversity’.³²³ Finally, certain treaties specifically require that publicity should be given to specially protected areas,³²⁴ or to maritime navigation dangers,³²⁵ or to particular requirements for the prevention, reduction and control of pollution of the marine environment.³²⁶

Eco-Labeling

The labelling of environmental aspects of goods and services (eco-labelling) emerged as an international issue in the trade context, following Mexico’s complaint that the US 1990 Dolphin Protection Consumer Information Act (allowing ‘Dolphin Safe’ labels to be placed on tuna products provided that dolphins had not been killed) was incompatible with the General Agreement on Tariffs and Trade (GATT). Although a GATT Panel in the original 1994 dispute upheld the legislation, it did so in terms that suggested that other eco-labelling rules might be incompatible with relevant WTO rules under the GATT and Technical Barriers to Trade (TBT) Agreement.³²⁷ In 2008, Mexico reinitiated the dispute against the US arguing that the ‘dolphin safe’ labelling requirement violated the GATT and TBT Agreement.³²⁸ During long-running litigation that stretched over eight years, the WTO ruled in Mexico’s favour on four occasions finding that, despite amendments to the US law, the dolphin safe labelling requirements did not comply with WTO rules. The findings in *Tuna/Dolphin II* cast a cloud over the WTO compatibility of future eco-labelling schemes.³²⁹

In respect of living modified organisms, the issue of eco-labelling is governed, for its parties, by the 2000 Biosafety Protocol, which requires living modified organisms intended for direct use as food, feed or for processing to be identified to show that they ‘may contain’ living modified organisms and are not intended for intentional introduction into the environment.³³⁰ More generally, the 1998 Aarhus Convention requires parties to develop

³¹⁹ 1989 Basel Convention, Art. 10(4); 1992 Climate Change Convention, Art. 4(1)(i); 1992 Biodiversity Convention, Art. 13; 1998 POPs Protocol to the 1979 LRTAP Convention, Art. 6; 1999 Protocol on Water and Health to the 1992 Watercourses Convention, Art. 9(1); 1999 Acidification, Eutrophication and Ground-Level Ozone (Gothenburg) Protocol, Art. 5(1) and (2); 2000 Cartagena Protocol, Art. 23; 2001 POPs Convention, Art. 10(1)(c) and (f); 2003 Protocol on Pollutant Release and Transfer Registers, Art. 15; 2013 Minamata Mercury Convention, Art. 18(2).

³²⁰ 1985 ASEAN Agreement, Art. 16(1) and (3); 1992 Biodiversity Convention, Arts. 12 and 13; 1992 Climate Change Convention, Art. 4(1)(i); Ramsar Convention Res. VII.9 (1999); and 2001 POPs Convention, Art. 10(1)(e) and (g).

³²¹ 1986 ILO Asbestos Convention, Art. 22; 1988 Construction Convention, Art. 33. ³²² Art. 29(1)(e).

³²³ Art. 23(1)(a). ³²⁴ 1982 Geneva SPA Protocol, Art. 8(1) (applies also to buffer areas).

³²⁵ 1982 UNCLOS, Art. 24(2). ³²⁶ *Ibid.*, Art. 211(3). ³²⁷ Chapter 18, pp. 854–5.

³²⁸ On the WTO rules, see *ibid.*, pp. 853–5.

³²⁹ L. Sullivan, ‘The Epic Struggle for Dolphin-Safe Tuna: To Be Continued – A Case for Accommodating Nonprotectionist Eco-Labels in the WTO’, 47(3) *Vanderbilt Journal of Transnational Law* 861 (2014).

³³⁰ Art. 18(2)(a). Detailed requirements for implementation of this paragraph are yet to be finalised by the COP/MOP: BS-V/8, Handling, Transport, Packaging and Identification of Living Modified Organisms: Paragraph 2(a) of Article 18, UNEP/CBD/BS/COP-MOP/5/17; see also Art. 18(2)(b) and (c) on identification of LMOs contained and intended for intentional introduction into the environment.

mechanisms to ensure that product information is available to allow consumers to make informed environmental choices.³³¹

Eco-Auditing and Accounting

Environmental considerations are increasingly addressed in regulatory and voluntary schemes designed to identify the environmental effects of the activities of companies or industrial sites.³³² These measures call for a transformation of conventional accounting practices and statements in order to take into account the environmental costs of production and other activities, which have in the past been treated for the most part as 'zero-priced' resources. The primary purpose of environmental accounting is to ensure that environmental costs are accurately reflected in the individual accounts and balance sheets of companies, or the national accounts of states. An important secondary purpose is to ensure that information on the use of environmental resources is disclosed; information provided in accounts may relate to environmental policies and programmes, environmental improvements, or the financial impacts of environmental measures, as well as responsibilities for environmental clean-up or related measures. Environmental auditing, or 'eco-auditing', describes a technique for allowing a company or a state to assess the impact of its activities on the environment, which includes procedures beyond the scope of a traditional financial audit that can be performed by an internal consultant or by an independent third person.

The most important developments relating to environmental accounting and auditing have occurred at the national level.³³³ At the international level, the most significant work on environmental accounting has been carried out under the auspices of the former UN Centre on Transnational Corporations (UNCTC) and, subsequently, the United Nations Conference on Trade and Development (UNCTAD). Additionally, the International Standards Organization (ISO) has developed its ISO 14000 series of standards for environmental management, which play an influential role in environmental management systems adopted by companies operating in developed countries.³³⁴ International financial organisations are also emerging as an important forum for the standardisation of environmental auditing and accounting standards in key areas such as carbon risk disclosure.³³⁵

Environmental Accounting

Although discussions regarding environmental accounting have taken place in the international community for over two decades, no international legal obligations have been adopted by states

³³¹ Art. 5(7).

³³² H. Gleckman, 'Proposed Requirements for Transnational Corporations to Disclose Information on Product and Process Hazards', 6 *Boston University International Law Journal* 89 (1988); L. Spedding, 'Environmental Auditing and International Standards', 3 *Review of European Community and International Environmental Law* 14 (1994).

³³³ For a short survey of national practices, see Report of the Secretary General: Information Disclosure Relating to Environmental Measures, UN Doc. E/C.10/AC.3/1990/5, 16 January 1990, especially 7–14; see also Report of the Secretary General: International Survey of Corporate Reporting Practices, UN Doc. E/C.10/AC.3/1992/3, 13 January 1992; INTOSAI Working Group on Environmental Auditing, *Environmental Accounting: Current Status and Options for SAIs* (2010), Appendix 2: Examples of National Environmental Accounting Efforts.

³³⁴ ISO standards represent a consensus agreement of manufacturers, vendors and users, consumer groups, testing laboratories, governments, engineering professions and research organisations. ISO 14001:2015 is the latest version of the standard.

³³⁵ See e.g. Taskforce on Climate-related Financial Disclosures of the Financial Stability Board, www.fsb-tcfd.org

or international organisations in relation to environmental accounting. A guide to possible future developments at the international level is reflected in the work of the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR), established under the auspices of the former UNCTC, and now functioning under UNCTAD. The work of the former UNCTC in this area was submitted as a report to the UNCED Preparatory Committee,³³⁶ and was partly reflected in Principle 16 of the Rio Declaration, which calls on national authorities to 'endeavour to promote the internalisation of environmental costs', and in Agenda 21.³³⁷ The 1991 UNCTC report recognised that the main challenge for environmental accounting was to develop an acceptable valuation method for quantifying the costs of non-sustainable economic activity, and identified some of the flaws in traditional accounting rules and practices in relation to environmental resources:

It does not account for the full costs of production, including the costs of consuming essential natural resources such as air, water and fertile land . . . In addition, accounting rules penalise, rather than encourage, the environmentally responsible corporation. The more a corporation spends on prevention and clean-up, the less per share it earns in the short run. Accounting lacks a vehicle for recording 'green assets' and monitoring their use, for distinguishing between the costs of renewable versus non-renewable resources and for providing accounting incentives to improve environmental protection.³³⁸

The UNCTC recognised the need to ensure that accounts reflect environmental costs so that stakeholders have information to enable them to make the best uses of resources, taking account of 'the rights and obligations of shareholders, customers, and local communities affected by environmental degradation, as well as the implicit rights of other species and other habitats'.³³⁹ It also identified the need to improve traditional financial statements, principally to address the concerns of securities regulators, insurance companies, banks and shareholders about unreported contingent liabilities which might have an adverse effect on the net worth of a corporation. This raises a major problem of access to, and dissemination of, information, described by the UNCTC report as 'unprecedented disclosure problems in how, and when, to account for the potential contingent liabilities'.³⁴⁰ The report identified three obstacles to the taking or reporting of environmental protection measures by companies. First, the lack of incentive to record liabilities which results from the rule in many countries that expenses are only deductible for tax purposes when paid; second, the impact of environmental costs on short-term earnings; and, third, the difficulty of separating environmental costs from other costs.³⁴¹ The report noted that accounting for environmental expenses is feasible, and raises reporting issues which are 'tractable and essentially of a definitional and classificatory nature'.³⁴² Environmental liabilities raised more problems, in large part because of the difficulty in determining a 'reasonable estimate' of future obligations in the face of environmental liabilities which are dependent upon 'inherent uncertainties in future legislation, technological change and extent or nature of environmental clean-up required'.³⁴³

³³⁶ UN Doc. A/CONF.15 1/PC/89, 22 August 1991; also Report of the Secretary General: Accounting for Environmental Protection Measures, UN Doc. E/C.10/AC.3/1991/5, 11 February 1991.

³³⁷ See also WSSD Plan of Implementation, para. 18; *The Future We Want* (Rio+20 Summit), A/RES/66/228, para. 47 (corporate sustainability reporting).

³³⁸ *Ibid.*, 4. ³³⁹ *Ibid.*, 5. ³⁴⁰ *Ibid.*, 6. ³⁴¹ *Ibid.*, 6-7. ³⁴² *Ibid.*

³⁴³ *Ibid.*; on potential future developments in the law of liability for environmental damage, see Chapter 16.

Since 1990, ISAR has sought to address these and other accounting issues by proposing methods for integrating environmental costs and liabilities into traditional accounting methods, including incorporating environmental information into financial disclosures and annual reports.³⁴⁴ In 1998, it published a guidance document to provide assistance to enterprises, regulators and standard-setting bodies regarding best practice in accounting for environmental transactions and events in the financial statements and associated notes.³⁴⁵ The guidance document urged financial statements to recognise environmental costs,³⁴⁶ and to measure environmental liabilities,³⁴⁷ and recommended methods for recognising, measuring and disclosing environmental costs.³⁴⁸ Following on from this work, in 2004 ISAR published a Manual for Users and Preparers of Eco-Efficiency Indicators.³⁴⁹ Eco-efficiency indicators are designed to allow enterprises to measure their environmental performance relative to financial performance in a systematic and consistent fashion over periods of time. Environmental performance is assessed with respect to five generic environmental issues: water use, energy use, global warming contribution, ozone-depleting substances and waste. More recently, ISAR has produced a Best Practice Guidance for Policymakers and Stock Exchanges on Sustainability Reporting Initiatives³⁵⁰ in response to calls for companies to improve the integration of sustainability information in their reporting cycles, including at the Rio+20 Summit.³⁵¹

Environmental Auditing

International legal developments on environmental auditing – a necessary component of environmental accounting – began with the adoption in April 1993 of an EU Regulation establishing a voluntary scheme, revised in 2001 and 2009.³⁵² The EU's eco-management and audit scheme (EMAS) is intended to improve the environmental performance of the industrial activities of companies. The scheme encourages companies to: implement environmental policies, programmes and management systems in relation to their sites; evaluate their environmental performance; provide information on environmental performance to the public; and encourage employee participation within the management system.³⁵³ Multilateral development banks, led by the European Bank for Reconstruction and Development (EBRD), have also conducted environmental audits on certain projects as part of a screening process to determine their

³⁴⁴ An important initiative in respect of the latter is Global Reporting Initiative's *Sustainability Reporting Guidelines* (2013, 4th edn), www.globalreporting.org/standards/g4/Pages/default.aspx

³⁴⁵ ISAR, *Accounting and Financial Reporting for Environmental Costs and Liabilities* (1998), para. 2.

³⁴⁶ Defined as 'the costs of steps taken, or required to be taken, to manage the environmental impacts of an enterprise's activity in an environmentally responsible manner, as well as other costs driven by the environmental objectives and requirements of the enterprise' (para. 9).

³⁴⁷ Defined as 'obligations relating to environmental costs that are incurred by an enterprise and that meet the criteria for recognition as a liability. When the amount or timing of the expenditure that will be incurred to settle the liability is uncertain, "environmental liabilities" are referred to as "provisions for environmental liabilities"' (*ibid.*).

³⁴⁸ *Ibid.*, Part V, paras. 11–20; Part VI, paras. 21–9; Part VIII, paras. 34–42; Part IX, paras. 43–61.

³⁴⁹ Additionally, UN foundation partnership organisations, such as the Global Reporting Initiative and the Global Compact, have also called for revisions to financial disclosure to take into account all aspects of sustainable development. These 'triple bottom line' reports would take into account the economic, environmental and social costs of an enterprise's activities.

³⁵⁰ UNCTAD/DIAE/ED/2013/6. See further, <http://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=931>

³⁵¹ *Future We Want*, para. 47 (corporate sustainability reporting).

³⁵² Council Regulation (EC) No. 1221/2009 of 22 December 2009, OJ L342, 25 November 2009, 1, in force 11 January 2010.

³⁵³ *Ibid.*, Art. 4(a)–(d).

potential liability, as well as that of project sponsors, for environmental damage related to loans, and to enhance environmental management of the facility.³⁵⁴

TECHNOLOGY TRANSFER AND TECHNICAL ASSISTANCE

As with the sharing of scientific and technical information regarding environmental issues discussed in previous sections, dissemination of technical know-how and clean technologies, especially to developing countries with limited technical capacity, is viewed as an important mechanism for giving effect to international environmental obligations and the principle of common but differentiated responsibilities. On the one hand, a major problem facing the international community is the use of obsolete, environmentally damaging techniques by industry in many countries. The wider dissemination and use of state-of-the-art technologies would go a long way to reducing the damaging effects of certain activities. It is also evident that in dealing with environmental problems such as climate change and pollution associated with certain industrial chemicals and pesticides, it is necessary to develop and disseminate a range of innovative technologies to replace existing substances and modes of energy production. Consequently, devising means to encourage or require the transfer of environmentally sound technologies, particularly to developing countries, is a central goal of international environmental law.

Technology transfer is a term that is frequently used, with little consideration given to what it actually means. In general terms, 'technology transfer' describes the specific communication of a body of knowledge which is enshrined in a particular transaction, comprising an integrated sequence of commercial or non-commercial transactions, which might include the following:

the grant or assignment of industrial property rights; the communication of technical know-how in a documentary form; the communication of technical or other know-how in the supply of services; assistance in the commissioning of an industrial plant; the sale or lease of machinery or the provision of services in relation to the sale or lease of machinery; providing services to assist in the recruitment and training of staff and the institutions of managerial and accounting procedures; providing services in relation to the marketing and distribution of the product of the plant.³⁵⁵

In the context of international environmental agreements, technology transfer could include each one of these aspects, as well as larger infrastructure projects and technologies and services specifically related to environmental know-how. In its 2000 report, the IPCC defined the term 'technology transfer' as a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change among different stakeholders.

³⁵⁴ 3 *Yearbook of International Environmental Law*, 545 (1992). See also S. Buzar, 'Energy, Environment and International Financial Institutions: The EBRD's Activities in the Western Balkans', 90(4) *Geografiska Annaler: Series B, Human Geography* 409 (2008); S. Ferrey, 'Gate Keeping Global Warming: The International Role of Environmental Assessments and Regulation in Controlling Choices for Future Power Development', 19 *Fordham Environmental Law Review* 101 (2009).

³⁵⁵ M. Blakeney, *Legal Aspects of the Transfer of Technology to Developing Countries* (Oxford: ESC, 1989), 3; K. Sullivan, 'Technology Transfer Provisions in Multilateral Environmental Agreements: A Commercial Perspective', 22 *Environmental Law and Management* 288, 291 (2010).

The term 'transfer' was further defined to 'encompass diffusion of technologies and technology cooperation across and within countries', as well as 'the process of learning to understand, utilize and replicate the technology, including the capacity to choose and adapt to local conditions and integrate it with indigenous technologies'.³⁵⁶

Soft Law Developments

As early as 1972, Principle 12 of the Stockholm Declaration recognised the need to make international technical assistance available to developing countries, and Principle 20 called for 'environmental technologies to be made available to developing countries on terms which would encourage their wide dissemination without constituting an economic burden'. Nonetheless, prior to UNCED, the provisions of international environmental treaties concerning the transfer of technology and know-how, as well as the provision of technical assistance, particularly from developed to developing countries, established only vague and general commitments of limited value and effect.

The issue of technology transfer received enhanced attention at UNCED. Agenda 21 devoted an entire chapter to the subject and related issues, reflecting the commitment, albeit a limited one, of the international community concerning technology transfer and technical assistance.³⁵⁷ The main objectives of Agenda 21 in this regard were to help ensure access to scientific and technological information, and to:

promote, facilitate and finance, as appropriate, the access to and the transfer of environmentally sound technologies and corresponding know-how, in particular to developing countries, on favourable terms, including on concessional and preferential terms, as mutually agreed, taking into account the need to protect intellectual property rights as well as the special needs of developing countries for the implementation of Agenda 21.³⁵⁸

Further objectives included: promoting environmentally sound indigenous technologies; supporting endogenous capacity-building; and promoting long-term partnerships between holders of technologies and potential users.³⁵⁹ Similar provisions were reflected in Principle 9 of the Rio Declaration, which declares that:

states should co-operate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

Both of these instruments set out 'safe' commitments, and it was left for more formal treaty arrangements subsequently to translate the objectives into the actual transfer of technology.

³⁵⁶ IPCC, *Methodological and Technological Issues in Technology Transfer* (2000), 16.

³⁵⁷ Chapter 34 of Agenda 21 ('Transfer of Environmentally Sound Technology, Co-operation and Capacity-Building').

³⁵⁸ Agenda 21, para. 34.14(a) and (b). ³⁵⁹ Para. 34.14(c)-(e).

The frequent references to technology transfer and technical capacity-building in the WSSD Plan of Implementation and Rio+20 Summit Outcome document reflect the ongoing importance of this issue in international environmental law, although both instruments did little more than restate the 1992 commitments.³⁶⁰

The inadequacy of many treaty provisions on technology transfer was widely recognised at UNCED, and developments reflected in the provisions of treaties adopted at and since that conference confirm that technology transfer provisions are acquiring an enhanced legal and practical significance, with renewed efforts to address the issues properly. A first development was broad recognition of the need to ensure that financial resources are available to meet the costs of transferring environmentally sound technologies and know-how, which contributed to the establishment of international mechanisms to channel resources. A second development – evident in treaties such as the 1992 Biodiversity and Climate Change Conventions – was the linkage made between the implementation by developing country parties of their treaty commitments with the transfer of technology and know-how from developed country parties in fulfilment of their treaty obligations. A third development, considered in the final section of the chapter, seeks to address the problem that the application of intellectual property rights might raise barriers to the transfer of environmentally sound technologies.

Treaty Provisions

The difficulties in establishing practical and effective means to ensure the transfer of environmentally sound technology is evident from the unsuccessful early efforts of the international community to elaborate an International Code of Conduct on the Transfer of Technology. This effort, under the auspices of the United Nations Conference on Trade and Development (UNCTAD) and the World Intellectual Property Organization (WIPO), was designed to establish basic rules of general application governing the transfer of technology.³⁶¹ Progress on the subject was equally limited under early international environmental agreements. Early treaties included general language on the exchange of information on appropriate technologies.³⁶² UNCLOS included a more detailed commitment to technology transfer, in particular to developing countries. Part XIV contains thirteen Articles on the development and transfer of marine technology, and adopts language that was subsequently relied upon in the UNCED instruments. UNCLOS calls for the development and transfer of science and marine technology on ‘fair and reasonable terms and conditions’ as a principal objective, taking into account the capabilities of states with regard to, inter alia, the conservation and management of marine resources and the

³⁶⁰ Plan of Implementation, paras. 99–100; *Future We Want*, paras. 72–4. The Plan also supported efforts to develop rules on access to genetic resources and benefit sharing (para. 44(o)), the culmination of which was the 2010 Nagoya Protocol, discussed at pp. 724–6.

³⁶¹ The draft Code sought to establish rules on, inter alia: objectives and principles; national regulations; restrictive business practices; responsibilities and obligations of parties to technology transfer transactions; special treatment for developing countries; international collaboration; and institutional and dispute settlement mechanisms. By 1993, it became clear that agreement on a Code would not be forthcoming (UNGA Res. 48/167 (1993)). On the history of the Code, see Blakeney, *Legal Aspects of the Transfer of Technology to Developing Countries*, 131–61; S. Patel, P. Roffe and A. Yusuf, *International Technology Transfer: The Origins and Aftermath of the United Nations Negotiations on a Code of Conduct* (The Hague/London: Kluwer, 2000).

³⁶² See 1979 LRTAP Convention, Art. 8(c); see also 1988 NO_x Protocol, Art. 3 (Exchange of Technology); 1991 VOC Protocol, Art. 4 (Exchange of Technology).

protection and preservation of the marine environment, and should seek to accelerate the social and economic development of the developing states.³⁶³ Under UNCLOS, states commit themselves to: foster favourable economic and legal conditions for technology transfer for the benefit of all parties concerned on an equitable basis;³⁶⁴ promote the acquisition, evaluation and dissemination of marine technological knowledge; facilitate access to information and data; develop appropriate marine technology; and develop the necessary infrastructure to facilitate the transfer of technology.³⁶⁵ Under Article 269, states are required to endeavour to, inter alia:

establish programmes of technical co-operation for the effective transfer of all kinds of marine technology to states which may need and request technical assistance in this field, particularly the developing land-locked and geographically disadvantaged states, as well as other developing states which have not been able either to establish or develop their own technological capacity in marine science and in the exploration and exploitation of marine resources or to develop the infrastructure of such technology.

They must also promote 'favourable conditions for the conclusion of agreements, contracts and other similar arrangements, under equitable and reasonable conditions'.³⁶⁶ Further commitments concern fostering international cooperation and establishing national and regional marine scientific and technological centres whose functions include compiling information on the marketing of technology and on contracts and other arrangements concerning patents.³⁶⁷ The UNEP Regional Seas Conventions include rather more general commitments on scientific and technical cooperation.³⁶⁸ Other conventions providing for the promotion of environmentally sound technologies include the 1994 Desertification Convention³⁶⁹ and 2013 Minamata Mercury Convention³⁷⁰ and, in relation to technical assistance, the 2001 POPs Convention.³⁷¹

The Ozone Regime

More concrete legal developments in relation to the transfer of technology occurred under the regime established by the 1985 Vienna Convention and the 1987 Montreal Protocol. The earlier treaty required parties to facilitate and encourage the exchange of scientific, technical, socio-economic, commercial and legal information and to cooperate, consistently with their national laws, in promoting the 'development and transfer of technology and knowledge'.³⁷² The original 1987 Montreal Protocol provided for cooperation in information exchange and in promoting

³⁶³ Art. 266(1) and (2). ³⁶⁴ Art. 266(3). ³⁶⁵ Art. 268. ³⁶⁶ Art. 269.

³⁶⁷ Arts. 270–278, especially Art. 277(h). See also Art. 144 (technology transfer relating to activities in the Area) and Art. 202 (technical assistance to developing countries).

³⁶⁸ 1980 Athens LBS Protocol, Arts. 9 and 10; 1983 Cartagena Convention, Art. 13; 1985 Nairobi Convention, Art. 14; 2010 Nairobi Convention, Art. 15; 1986 Noumea Convention, Arts. 17 and 18; see Chapter 11, pp. 465–72. More specific requirements are found in the 2002 Antigua Convention: Art. 12 ('Scientific and technological information'), which requires parties to undertake activities such as 'Encouraging scientific, technological and educational assistance programmes, and those of any other kind, for the protection and sustainable development of marine and coastal areas, and for the prevention, reduction and control of pollution and other forms of environmental deterioration in such areas' (Art. 12(1)(a)), with such assistance comprising, inter alia: the training of scientific and technical staff (Art. 12(1)(a)(iii)); capacity-building of the contracting parties to train teams and adopt those techniques and methods (Art. 12(1)(a)(iii)); the supply of equipment and installations for research, monitoring and educational and other programmes (Art. 12(1)(a)(iv)); as well as the coordination of national research programmes (Art. 12(2)).

³⁶⁹ Art. 18. ³⁷⁰ Art. 14. ³⁷¹ Art. 12. ³⁷² 1985 Vienna Convention, Art. 4 and Annex II.

technical assistance to developing countries to facilitate participation in and implementation of the Protocol.³⁷³ It was only with the 1990 amendments that the Montreal Protocol required each party to take steps to ensure that the 'best available, environmentally safe substitutes and related technologies are expeditiously transferred to' developing country parties and that those transfers occur under 'fair and most favourable conditions'.³⁷⁴ The establishment of the Multilateral Fund, providing financial resources to meet the incremental costs of enabling compliance by developing country parties with their obligations, has provided significant funds to meet the cost of supplying substitutes to controlled substances.³⁷⁵ The Montreal Protocol may also be interpreted as prohibiting the transfer of technologies that do not satisfy the standards of being 'environmentally safe', without expressly stating that commitment.

Biodiversity Convention

The 1992 Biodiversity Convention establishes a range of provisions which go some way towards encouraging, albeit not actually requiring, the transfer of technology. The Convention also addresses the relationship between technology transfer and intellectual property rights. The Convention links the effective implementation by developing countries of their commitments with the effective implementation by developed country parties of their commitments related to, *inter alia*, transfer of technology.³⁷⁶ The appropriate standard which technologies should satisfy is also elaborated: parties must provide and/or facilitate access for and transfer to other parties of 'technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment'.³⁷⁷ A wide range of technologies may be encompassed by this definition, including technologies for *in situ* and *ex situ* conservation, technologies for the sustainable management of biodiversity resources, monitoring technologies and modern biotechnologies based on genetic resources.³⁷⁸

The access and transfer to developing country parties of relevant technologies should take place under 'fair and most favourable terms, including on concessional and preferential terms where mutually agreed' and on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights.³⁷⁹ Technologies which make use of genetic resources provided by parties, in particular developing country parties, are to be accessed by and transferred to those parties on 'mutually agreed terms', including technology protected by patents and other intellectual property rights, where necessary, through the provisions of the Convention relating to financial resources and the financial mechanism.³⁸⁰ Moreover, each party must take appropriate measures with the aim that the private sector facilitates access to, joint development of and transfer of these technologies.³⁸¹ The Convention's financial mechanism should meet some of the costs of technology transfer as 'agreed full incremental costs'.³⁸²

³⁷³ 1987 Montreal Protocol, Arts. 9 and 10. ³⁷⁴ 1987 Montreal Protocol as amended in 1990, Art. 10A.

³⁷⁵ Art. 10(1); see Annex VIII, Indicative List of Categories of Incremental Costs, in Report of the Fourth Meeting of the Parties (25 November 1992), UNEP/OzL.Pro.4/15.

³⁷⁶ Art. 20(4). The definition of 'technology' simply states that it includes 'biotechnology' (Art. 2).

³⁷⁷ Art. 16(1). See also Conference of the Parties Decisions II/5 and III/16.

³⁷⁸ CBD Fact Sheet, 'Technology Transfer and Technological and Scientific Cooperation', www.cbd.int/tech-transfer. See also the Bio-Bridge Initiative on facilitating scientific and technological cooperation: www.cbd.int/biobridge

³⁷⁹ Art. 16(2). ³⁸⁰ Art. 16(3). See also Arts. 20 and 21. ³⁸¹ Art. 16(4). ³⁸² Art. 20(1) and (2).

2010 Nagoya Protocol

The Protocol addresses, in an interrelated manner, the topics of intellectual property, transfer of technological know-how and financial benefit sharing.³⁸³ It applies to genetic resources covered by the Convention as well as to traditional knowledge associated with such genetic resources.³⁸⁴ In respect of access to genetic resources, the Protocol establishes a requirement for the prior informed consent of the country of origin or another party that has acquired the genetic resources in accordance with the Convention.³⁸⁵ To facilitate access to genetic resources, parties allowing such access on a prior informed consent basis shall take the necessary legislative, administrative or policy measures to, inter alia, establish clear rules and procedures for requiring and establishing mutually agreed terms, including terms concerning intellectual property rights.³⁸⁶ In relation to genetic resources and associated traditional knowledge that occur in 'transboundary situations' or for which it is not possible to obtain prior informed consent, Article 10 directs the parties to consider the need for and modalities of a global multilateral benefit sharing mechanism, with the benefits used to support the conservation of biodiversity and sustainable use of its components globally. One possible model for such a regime might be that in place for activities in the deep-sea bed under Part XI of UNCLOS.³⁸⁷

An innovative feature of the Protocol is the obligations it places on parties to support compliance with domestic legislation or regulatory requirements to ensure that genetic resources utilised within their jurisdiction have been accessed in accordance with prior informed consent and that mutually agreed terms have been established, including in cases where the genetic resources or associated traditional knowledge concerned are held by indigenous or local communities.³⁸⁸ This obligation extends to ensuring the availability of opportunities to seek recourse within a party's legal system when disputes arise over mutually agreed terms and taking measures regarding access to justice.³⁸⁹ In addition, parties must take measures to monitor the utilisation of genetic resources after they leave the country, including by designating effective checkpoints at any stage of the value-chain: research, development, innovation, pre-commercialisation or commercialisation.³⁹⁰ In recognition of the challenges implementation of such obligations may pose for developing countries, the Protocol makes provision for capacity-building,³⁹¹ and access to the Convention's financial mechanism to support such efforts.³⁹²

It is envisaged that the Protocol will facilitate access to genetic resources for a variety of research and technological applications, from basic scientific research to development of new agricultural crop species, pharmaceuticals and biotechnology. The benefits from such applications – to be shared fairly and equitably with the countries or communities providing access to genetic resources or associated traditional knowledge – may include monetary benefits (for example, access or licence fees, royalties, research funding or joint ownership of intellectual property rights) as well as non-monetary benefits (for example, sharing of research results or research collaboration, capacity-building of various kinds and technology transfer under fair and most favourable terms).³⁹³ By giving countries and communities of origin a stake in the

³⁸³ See also, Chapter 10, pp. 403–4. ³⁸⁴ Art. 3. ³⁸⁵ Art. 6. See further Chapter 10, pp. 403–4. ³⁸⁶ Art. 6(3).

³⁸⁷ This regime is discussed in Chapter 11, p. 496. See also Executive Secretary, Synthesis of Views with respect to the Need for and Modalities of a Global Multilateral Benefit Sharing Mechanism (Art. 10), UNEP/CBD/ICNP/2/7, 12 March 2012; Decision NP-1/10 (2014).

³⁸⁸ Arts. 15 and 16. ³⁸⁹ Art. 18. ³⁹⁰ Art. 17. ³⁹¹ Art. 22. See also Art. 23 on technology transfer.

³⁹² Art. 25. ³⁹³ Art. 5(4). An Annex to the Protocol sets out a non-exhaustive list of such benefits.

benefits derived from research and technological development based on genetic resources, it is believed this will create incentives to conserve and sustainably use genetic resources in line with the broader biodiversity conservation aims of the Convention.³⁹⁴

The Climate Change Regime

Given the need for widespread transition to clean energy technologies to reduce greenhouse gas emissions and mitigate climate change, the international climate change regime has become a focal point for discussions around how to facilitate technology transfer in a way that meets the needs of developing countries but also adequately protects intellectual property rights in those technologies.³⁹⁵

The 1992 Climate Change Convention contains similar technology transfer provisions to those of the Biodiversity Convention, which require all parties to promote and cooperate in 'full, open and prompt' exchange of relevant scientific, technical, socio-economic and legal information related to the climate system and climate change.³⁹⁶ The provision of financial resources by developed country parties includes resources for the transfer of technology, and those parties undertake to take 'all practicable steps to promote, facilitate, and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other parties, particularly developing country parties, to enable them to implement the provisions of the Convention'.³⁹⁷ The Kyoto Protocol echoed this commitment in similar terms.³⁹⁸

The process of technology transfer under the Convention and Protocol includes support for the enhancement of endogenous capacities and technologies of developing country parties. Developing country parties are also encouraged to propose projects voluntarily, including specific technologies needed to implement projects.³⁹⁹ In addition, the Clean Development Mechanism established under Article 12 of the 1997 Kyoto Protocol has played an important role in facilitating the transfer of environmental technologies, particularly in the energy sector.⁴⁰⁰

Development of the Convention's arrangements for technology transfer has a long history and has gone through many iterations.⁴⁰¹ The sixteenth Conference of the Parties held in Cancún in December 2010 decided to establish a new Technology Mechanism to further the goals of technology transfer under the Convention. This mechanism consists of a Technology Executive Committee dealing with policy issues and a Climate Technology Centre and Network focused on implementation.⁴⁰² The latter facilitates a network of national, regional, sectoral and international technology networks, organisations and initiatives with functions of advice and information provision, training, technology cooperation and encouraging collaborative research and

³⁹⁴ For an assessment of case studies, see D. Robinson, *Biodiversity, Access and Benefit-Sharing: Global Case Studies* (Abingdon, UK: Routledge/Earthscan, 2015).

³⁹⁵ See further readings on this topic listed at the end of this chapter. ³⁹⁶ Art. 4(1)(h).

³⁹⁷ Arts. 4(5) and 11(1). ³⁹⁸ Art. 10(c). ³⁹⁹ Art. 4(1).

⁴⁰⁰ See G. Cox, 'The Clean Development Mechanism as a Vehicle for Technology Transfer and Sustainable Development – Myth or Reality?', 6(2) *Law, Environment and Development Journal* 179 (2010); P. Nelson, 'An African Dimension to the Clean Development Mechanism: Finding a Path to Sustainable Development in the Energy Sector', 32 *Denver Journal of International Law and Policy* 615 (2003–4).

⁴⁰¹ Previous work was conducted under the auspices of an Expert Group on Technology Transfer (EGTT), which issued various reports and guidelines, including its *Handbook for Conducting Technology Needs Assessment for Climate Change*, updated in 2010.

⁴⁰² See further, http://unfccc.int/ttclear/templates/render cms_page?TEM_home

development of environmentally sound technologies for climate change. The 2015 Paris Agreement provides that the Convention's Technology Mechanism will also serve the Agreement, with overarching guidance provided by a 'technology framework'.⁴⁰³ The Agreement's reference to financial support for such activities, however, is more vague than the equivalent Convention provision. Article 10(6) merely states that '[s]upport, including financial support, shall be provided to developing country parties for implementation'; information relating to this support will also be reviewed in the Agreement's global stocktake process.

Intellectual Property and Barriers to Technology Transfer

Intellectual property refers to property rights protected by laws that concern the application of thoughts, ideas and information which are of commercial value, including the law relating to patents, copyrights, trademarks, trade secrets and other similar rights.⁴⁰⁴ A key legal issue arising out of the application of patent and other intellectual property rights in the international environmental arena concerns the extent to which intellectual property rights granted, for example in accordance with the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), may limit the transfer of environmentally sound technologies as required by international conventions.⁴⁰⁵

The first issue concerns the claim by developed states, in the negotiation of international environmental agreements, that they are precluded from imposing technology transfer requirements on persons within their jurisdiction or control because of their obligations under national and international laws for the protection of intellectual property,⁴⁰⁶ patents⁴⁰⁷ and biotechnology.⁴⁰⁸ This issue has been particularly acute in the context of the development of biotechnology and the conservation of biodiversity, and is also emerging as a critical issue in the context of environmentally sound technologies for climate change mitigation and adaptation. It was addressed by Agenda 21, in relation to technology transfer, where the international community declared the need to consider the role of patent protection and intellectual property rights and to

⁴⁰³ Art. 10(3) and (4). See also Art. 11 on capacity-building.

⁴⁰⁴ See W. R. Cornish, D. Llewelyn and T. Alpin, *Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights* (London: Sweet & Maxwell, 2013, 8th edn); Blakeney, *Legal Aspects of the Transfer of Technology to Developing Countries*.

⁴⁰⁵ The interaction of international environmental law with intellectual property rights also arises in two further contexts (see Chapter 18, pp. 916ff.): first, in considering whether intellectual property rights should be granted to potentially environmentally damaging technologies, for example, the grant of patents in respect of living organisms (biotechnology); and, second, the extent to which intellectual property rights can or should protect indigenous environmental knowledge which has been in the public domain for decades or more. The 2010 Nagoya Protocol discussed at pp. 725–6 and Chapter 10, pp. 403–4 contains provisions dealing with the protection of 'traditional knowledge'.

⁴⁰⁶ The principal international agreement is the Convention for the Protection of Industrial Property, Paris, 20 March 1883, in force 6 July 1884, 10 Martens (2d) 133 (as revised, see 828 UNTS 305). Many treaties are administered by the World Intellectual Property Organization, which maintains a listing of treaties at www.wipo.int/treaties/en

⁴⁰⁷ The relevant agreements include the Patent Co-operation Treaty (as amended), Washington, 19 June 1970, in force 24 January 1978, 9 ILM 978 (1970); Convention on the Grant of European Patents, Munich, 5 October 1973, in force 7 October 1977, 13 ILM 270 (1973) (1973 European Patent Convention; a revised version of the Convention entered into force on 13 December 2007); Agreement Concerning International Patent Classification, Strasbourg, 24 March 1971, in force 7 October 1975, Cmnd 6238, UKTS 113 (1975) (see IPC-2016.01).

⁴⁰⁸ The relevant agreements include the International Convention for the Protection of New Varieties of Plants (UPOV Convention), Brussels, 2 December 1961, in force 10 August 1968, 815 UNTS 89; Treaty on the International Recognition of the Deposit of Micro-organisms for the Purposes of Patent Procedure, Budapest, 28 April 1977, in force 19 August 1980, 17 ILM 285 (1977).

examine their impact on the access to and transfer of environmentally sound technology, particularly to developing countries.⁴⁰⁹ Significantly, Agenda 21 recognised the bar that intellectual property rights might place on the transfer of technologies: in a passage which balances competing interests, Agenda 21 called for measures to be taken (including acquisition through compulsory licensing and the provision of 'equitable and adequate compensation') which are in 'compliance with and under the specific circumstances recognised by the relevant international conventions adhered to by states'.⁴¹⁰

The 1992 Biodiversity Convention was the first international environmental treaty to tackle the issue of intellectual property, its provisions reflecting a concern about the possible threat to intellectual property rights posed by technology transfer obligations, as well as the need to ensure the equitable allocation of 'ownership' rights in biological materials. Taken together, the various provisions are inconclusive as to which rights prevail in the event of a conflict. The Biodiversity Convention recognises the need to protect property rights, providing in Article 16(2) that the access to and transfer of technology that is subject to patents and other intellectual property rights is to be provided 'on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights'.⁴¹¹ However, in Article 16(5), the Convention also recognises that rights in intellectual property may have an influence on the implementation of the Convention, and calls on parties to cooperate on intellectual property rights 'subject to national legislation and international law in order to ensure that such rights are supportive and do not run counter to [the Convention's] objectives'. In this regard, the Conference of the Parties has recognised that intellectual property rights may have implications for the implementation of the Convention and the achievement of its objectives.⁴¹² At its seventh meeting in 2004, the Conference of the Parties adopted a work programme on technology transfer and technological and scientific cooperation, an aspect of which was the preparation of technical studies to further explore and analyse the role of intellectual property rights in technology transfer in the context of the Convention and identify potential options to increase synergy and overcome barriers to technology transfer and cooperation.⁴¹³ Finally, the language of Article 22 of the Convention suggests that intellectual property rights and obligations deriving from an existing international agreement might actually be overridden 'where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity'.⁴¹⁴ The language of this latter provision, if interpreted to provide for the supremacy of the

⁴⁰⁹ Agenda 21, paras. 34.10 and 34.18. See also the provisions of para. 44 of the WSSD Plan of Implementation on biodiversity.

⁴¹⁰ Agenda 21, para. 34.18(e)(iv).

⁴¹¹ See also Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising Out of Their Utilisation, COP 6, Decision VI/24 (2002), and the 2010 Nagoya Protocol discussed at pp. 725–6.

⁴¹² Decision III/17 (1996).

⁴¹³ Decision VII/29, Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Seventh Meeting, Kuala Lumpur, 9–20 and 27 February 2004, UNEP/CBD/COP/DEC/VII/29, Annex, Programme Element 3, para. 3.1.1. In 2007, a strategy for implementation of the work programme was developed by an Ad Hoc Technical Expert Group on Technology Transfer and Scientific and Technological Cooperation. See Strategy for Practical Implementation of the Programme of Work on Technology Transfer and Scientific and Technological Cooperation (2007), available at www.cbd.int/tech-transfer/ahtegtechnologycooperation.shtml. See also EGTT, 'The Role of Intellectual Property Rights in Technology Transfer in the Context of the Convention on Biological Diversity: A Technical Study', UNEP/CBD/COP/9/INF/7 (2008).

⁴¹⁴ Similar provisions are found in Art. 4(1) of the 2010 Nagoya Protocol, although the latter contains a caveat that the relevant paragraph 'is not intended to create a hierarchy between this Protocol and other international instruments'.

Biodiversity Convention, raises the possibility that it might conflict with international treaties protecting intellectual property rights, which conflict would fall to be resolved by recourse to the ordinary rules of public international law.⁴¹⁵ The note of uncertainty that this provision of the Biodiversity Convention introduced into the debate about the primacy of intellectual property rights caused sufficient concern to the United States to contribute to a delay in signing and an unwillingness to ratify that continues to the present day.⁴¹⁶

By contrast, the United States agreed in 2016 to ratify the 2001 Treaty on Plant Genetic Resources, which aims to ensure the conservation and sustainable use of plant genetic resources and the fair and equitable sharing of benefits.⁴¹⁷ It includes provisions designed to facilitate the transfer of technologies for the conservation of genetic resources. The heart of the Treaty is a 'Multilateral System' of access and benefit sharing in respect of plant genetic resources for the food and agriculture listed in Annex I to the Convention and which are under the management and control of parties and in the public domain.⁴¹⁸ The parties agree to facilitate access to resources forming part of the Multilateral System, and to that end recipients agree not to claim any intellectual property or other rights that limit access to the resources or their genetic parts or components.⁴¹⁹ Access to resources protected by intellectual and other property rights is to be consistent with relevant international agreements and with relevant national laws.⁴²⁰ The Treaty also provides that benefits accruing from the Multilateral System are to be shared fairly and equitably, including through the exchange of information and access to and transfer of technology.⁴²¹ Additionally, the parties undertake to provide and facilitate access to technologies for the conservation and use of resources under the Multilateral System and, recognising that some technologies can only be transferred through genetic material, to do so in conformity with the requirements of Article 12 'while respecting applicable property rights and access laws'.⁴²² Technology that is protected by intellectual property rights is to be transferred to developing countries and countries with economies in transition under

fair and most favourable terms, in particular in the case of technologies for use in conservation as well as technologies for the benefit of farmers in developing countries . . . including on concessional and preferential terms where mutually agreed. Such access and transfer shall be provided on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights.⁴²³

Similar provisions are found in the 2010 Nagoya Protocol to the Convention on Biological Diversity with respect to genetic resources and associated traditional knowledge covered by the Convention. Article 23 of the Protocol contains general provisions on technology transfer

⁴¹⁵ See Chapter 4, pp. 113–14.

⁴¹⁶ The Convention currently has 196 parties. The Holy See is the only other state not party to the Convention. The United States was apparently not reassured by a 2001 decision of the European Court of Justice declining to recognise an inherently adverse link between the patentability of certain inventions and compliance with obligations to promote technology transfers, under the 1992 Biodiversity Convention (see Case C-377/98 *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079, paras. 57–8).

⁴¹⁷ Chapter 10, p. 424. The treaty entered into force on 29 June 2004.

⁴¹⁸ Arts. 10 and 11(1)–(2). The Multilateral System also includes plant genetic resources held in specified *ex situ* collections (Art. 11(5)).

⁴¹⁹ Art. 12(1) and (2) and (3)(d). ⁴²⁰ Art. 12(3)(f). ⁴²¹ Art. 13(1) and (2). ⁴²² Art. 13(2)(b)(i).

⁴²³ Art. 13(2)(b)(iii).

requiring parties to collaborate and cooperate in technical and scientific research and development programmes, including biotechnological research activities, as a means to achieve the Protocol's objective.⁴²⁴ Parties undertake to promote and encourage access to technology by, and the transfer of technology to, developing country parties, especially least developed countries and small island states, and parties with economies in transition. Where possible and appropriate, such collaborative activities are to take place in the developing country parties that are the country of origin providing genetic resources. Benefits arising from the utilisation of genetic resources or associated traditional knowledge, as well as subsequent application and commercialisation, are to be shared in a fair and equitable way with the country of origin, or indigenous and local communities holding rights over such resources or knowledge, on mutually agreed terms.⁴²⁵ Such benefits may extend to, inter alia, joint ownership of relevant intellectual property rights and

[t]ransfer to the provider of the genetic resources of knowledge and technology under fair and most favourable terms, including on concessional and preferential terms where agreed, in particular, knowledge and technology that make use of genetic resources, including biotechnology, or that are relevant to the conservation and sustainable utilization of biological diversity.⁴²⁶

In addition, the terms of access mutually agreed may include terms in relation to intellectual property rights.⁴²⁷

In contrast to biodiversity treaties, the treaties of the climate change regime make no explicit mention of intellectual property and the relationship between technology transfer arrangements and protection of intellectual property rights remains an open question.⁴²⁸

CONCLUSIONS

There now exists an extensive body of international rules aiming to improve the dissemination of environmental information and technical know-how, both broadly recognised as central techniques for the implementation of environmental standards and procedures set by treaties and other international agreements.

In the field of environmental information, the original reporting, consultation and notification obligations, which are well established in international law, have been supplemented by a second generation of rules. On the one hand, these aim to improve scientific information available to multilateral treaty regimes for the purpose of reviewing parties' implementation of commitments, reviewing the adequacy of existing measures and identifying new technological means for achieving compliance.⁴²⁹ On the other hand, information techniques in international

⁴²⁴ As set out in Art. 1, the objective of the Protocol is 'the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components'.

⁴²⁵ Art. 5. ⁴²⁶ Annex 2(f) and (g). ⁴²⁷ Art. 6(3)(g).

⁴²⁸ See further M. Rimmer, *Intellectual Property and Climate Change* (Cheltenham, UK: Edward Elgar, 2011).

⁴²⁹ S. Andresen, T. Skodvin, A. Underdal and J. Wettstad, *Science and Politics in International Environmental Regimes: Between Integrity and Involvement* (Manchester/New York: Manchester University Press, 2000).

environmental law are deployed in order to increase the public availability of information by enhancing access, encouraging greater dissemination to consumers at various levels and, in a more limited fashion, imposing a positive obligation on certain states (in the UNECE region) to collect, report on and publish environmental information. Existing arrangements remain incomplete, however, and there are significant gaps within and across regions. The overall objective remains an increase in the quantity and quality of information available, greater dissemination among all relevant members of the international community, and ensuring that it is used to inform decision-making at all national and international levels. To that end, a number of tasks appear particularly important.

First, international cooperation on the gathering of information on the state of the environment needs to be further enhanced. Arrangements such as those reflected in the clearing-house and information exchange mechanisms set up under the 2000 Biosafety Protocol and the 2010 Nagoya Protocol on Access to Genetic Resources could be developed in other subject matter areas.

Second, compliance with basic reporting requirements under environmental treaties remains inadequate and should be improved, including by establishing arrangements for composite reports fulfilling obligations under two or more conventions; if states are unable or unwilling to fulfil these primary obligations, then it is unlikely that they will comply with the more onerous and important substantive standards established by the same treaties. Clearly, the collection of national information necessary to fulfil international reporting obligations can place heavy burdens on limited and already overstretched human, institutional and financial resources, especially in developing countries. The availability of financial resources for reporting under agreements such as the Biodiversity and Climate Conventions, and the Paris Agreement, should go some way towards improving compliance with reporting requirements and addressing associated equity concerns, but this needs to be coupled with education and training, and an enhanced role for international organisations in assisting with reporting.

Third, the general obligation in international law to consult and notify certain potentially harmful activities – reflected in the ILC's 2001 draft Articles on Prevention of Transboundary Harm and addressed in the ICJ's *Pulp Mills* decision – has broad support, but is not always complied with. Incidents such as the Chernobyl accident, the cyanide spillage (Baia Mare) in the Tisa River basin involving Hungary and Romania, and the damage to the Fukushima nuclear power plant in Japan following the earthquake and tsunami of March 2011, reflect the need for constant vigilance where emergency situations occur.

Fourth, the duty of states to provide – and the right of legal and natural persons to receive – environmental information and to enable participation in environmental decision-making is more broadly recognised, but requires further development in practice, not least by making citizens aware of their rights. The 1998 Aarhus Convention has been an important development, and provides a model for other regions. Its 2003 Protocol on Pollutant Release and Transfer Registers – open to accession by non-UNECE states and countries not party to the Aarhus Convention – represents a sophisticated approach for disseminating information about environmental releases of pollutants and wastes to the general public. EU experience suggests that the demand for environmental information and participation in environmental decision-making increases as citizens become aware of their rights, and that the processing of requests places significant demands on public authorities, which encourages them to find ways to avoid providing information (e.g. through insisting on commercial in-confidence exemptions).

Accordingly, it will be necessary to continue to ensure that the access to justice provisions of the Aarhus Convention are properly implemented and that other effective means of administrative or judicial redress are available at the national or international level to ensure that states fulfil their obligations.

Finally, the consolidation of mechanisms under treaties for the provision of scientific advice and technical information to treaty parties in a number of multilateral environmental regimes offers the prospect of better informed decision-making and more effective treaty implementation provided policymakers take sufficient heed of the information they receive. However, there is also the potential for subsidiary expert bodies, functioning as self-contained 'epistemic communities', to play too large a role in treaty decision-making processes,⁴³⁰ crowding out debates over important policy questions and restricting the scope for public participation.⁴³¹

Beyond the provision of scientific and technical information, another key mechanism for implementing international environmental obligations is that of transfer of environmentally sound technologies to developing countries. The legal relationship between environmental protection, technology transfer, and intellectual property rights is now well established and becoming increasingly complex. This results from the developments at the regional and global levels in the period shortly before UNCED, in the two conventions and other international acts adopted at UNCED, and in subsequent legislative and judicial developments. The consequence is a two-way interchange, also reflected in developments relating to the interplay of trade and environment discussed in Chapter 18: on the one hand, international environmental law and lawyers must take account of, and apply, legal concepts and rules deriving from the rules relating to the international economic system, including the protection of intellectual property rights; on the other hand, international economic institutions and their legal systems must integrate environmental considerations across the range of their activities.

Among the several challenges remaining, one of the most important is the development of effective modalities to ensure the transfer of environmentally sound technologies, which will allow developing countries to 'leapfrog' the dirty and obsolete technologies that have been used to underwrite mass industrialisation. International institutional developments have made progress in creating mechanisms to identify and assess appropriate technologies, provide information to buyers and sellers, and act as a conduit for independent advice on appropriate technologies. The idea of an international 'clearing-house', for instance, is now reflected in the 1998 Chemicals Convention and the 2000 Biosafety Protocol. These arrangements, and others such as the 2001 Plant Treaty's Multilateral System and renewed efforts to develop a Technology Mechanism under the auspices of the Climate Change Convention and Paris Agreement, should go some way towards achieving greater transfers of clean technologies. However, without appropriate international funding, it is unlikely that the technology transfer provisions set forth in environmental agreements will amount to very much, emphasising the need for strong linked financing arrangements. The 2010 Nagoya Protocol demonstrates progress made in another important area; namely ensuring that the benefits accruing from technological development based on genetic resources are fairly and equitably shared. This protocol gives developing countries rich in genetic resources a stake in technological development that could benefit the

⁴³⁰ P. Haas, 'Science Policy for Multilateral Environmental Governance', in N. Kanie and P. Haas (eds.), *Emerging Forces in Environmental Governance* (Tokyo/New York: United Nations University Press, 2004), 115.

⁴³¹ J. Peel, *Science and Risk Regulation in International Law* (Cambridge: Cambridge University Press, 2010).

conservation and sustainable use of biodiversity, rather than casting them always as the recipients of technology transfer from the developed world.

Finally, another important challenge relates to intellectual property rights, which can potentially pose barriers to technology transfer. The challenge here is to construct a system which can contribute to the efficient transfer of environmentally sound technologies, while also allowing the intellectual property rights necessary for innovation (including the traditional knowledge of indigenous peoples) to be adequately protected. Progress in this area has been more far-reaching in the biodiversity than in other treaty regimes; in coming years, the climate change regime is likely to emerge as a key arena for the development of rules around technology transfer and technical cooperation, and the relationship with intellectual property rights.

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16

Liability for Environmental Damage

CHAPTER OUTLINE

This chapter deals with the international rules governing liability for environmental damage. Liability is considered in this Part as an implementation technique which serves various purposes, including as an economic incentive for compliance, a sanction for wrongdoing, imposing corrective measures for restoration, and a means for internalising the environmental and other social costs of polluting processes. The chapter considers relevant liability rules in two broad categories:

1. state liability: the liability of international persons (generally states) under the international law rules of state responsibility set out in treaties or under general international law; and
2. civil liability: the liability of national or legal persons under national law rules adopted pursuant to international treaty obligations, such as those regarding nuclear installation accidents and oil pollution.

Common questions that arise across the two categories, include:

- what is 'environmental damage' and how are such damages to be measured;
- the requisite standard of care to prevent environmental harm and available defences to liability;
- who may bring a claim, against which entities and in which fora; and
- what remedies are available where liability is established.

INTRODUCTION

General principles of international law imposing liability on actors for their illegal acts, or for the adverse consequences of their lawful activities, are relatively well developed at a general level, and are also reflected in the Articles on State Responsibility adopted by the International Law Commission (ILC) in 2001.¹ In relation to environmental damage, however, the liability rules are still evolving and are in need of further development. Environmental damage refers here to damage to the 'environment', which has generally been defined in treaties and other international acts to include four possible elements: (1) fauna, flora, soil, water and climatic factors; (2) material assets (including archaeological and cultural heritage); (3) the landscape and

¹ Report of the ILC, UN Doc. A/56/10 (2001).

environmental amenity; and (4) the interrelationship between the above factors.² Most legal definitions of environment do not, therefore, include people and their property, although this is changing as a result of the increasing intersection of international environmental law with the area of human rights protection.³

Liability rules at the domestic or international level serve a variety of purposes. They may be a form of economic instrument that provides an incentive to encourage compliance with environmental obligations.⁴ They may also be used to impose sanctions for wrongful conduct, or to require corrective measures to restore a given environmental asset to its pre-damage condition. Finally, they may provide a technique for internalising environmental and other social costs into production processes and other activities in implementation of the polluter pays principle.⁵

States have long recognised the role of liability for environmental damage, as well as the inadequacies that exist. Principle 22 of the Stockholm Declaration recognised gaps and called on states to 'co-operate to develop further the international law regarding liability and compensation for victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such states to areas beyond their jurisdiction'. The 1982 World Charter for Nature did not directly address liability, although it called for degraded areas to be rehabilitated and for individuals to have access to means of redress when 'their environment has suffered damage or degradation'.⁶ The Rio Declaration reflected the limited progress made since 1972, emphasising the role of national rules and the further development of international rules including, implicitly, liability for damage to the environment itself. Principle 13 of the Rio Declaration provides that:

states shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also co-operate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

The shift in emphasis in the Rio Declaration reflected an unwillingness to establish rules of international law that might impose excessive costs; a trend that continues to this day.

In discussing international rules regarding liability for environmental damage, this chapter follows the distinction which has been drawn in practice between the liability of states and other international persons under public international law, and the liability of actors (which could include states) under rules of national law adopted pursuant to treaties which aim to harmonise national civil liability rules, or set minimum standards. The phrase 'state liability' is used to refer to the liability of international persons under the operation of rules of international law of state responsibility. 'Civil liability' refers to the liability of any legal or natural person under the rules of national law adopted pursuant to international treaty obligations establishing harmonised minimum standards. However, the distinction between state and civil liability can often be difficult to draw, as a number of treaties and other international acts have established an

² Chapter 1, pp. 14–16. ³ See Chapter 17, pp. 813–28.

⁴ See, in this regard, C. Murgatroyd, 'The World Bank: A Case for Lender Liability', 1 *Review of European Community and International Environmental Law* 436 (1992).

⁵ Chapter 6, pp. 240–4. ⁶ Paras. 11(c) and 23.

obligation for the state to provide public funds where an operator cannot meet certain costs of environmental damage.⁷

For state and civil liability, international rules address certain substantive and procedural elements that determine the nature and extent of the liability. The common issues that emerge are:

- whether to designate environmental damage as a distinct head of damage (separate from personal injury and property damage);
- defining environmental damage;
- establishing the standard of care (absolute, strict or fault);
- identifying the person or persons against whom the claim should be brought;
- determining who may bring a claim;
- designating the forum or fora before which claims may be brought;
- determining the remedies which are available; and
- providing for the availability of certain defences.

Many similarities exist among the various instruments, although each of the civil liability regimes sets its own rules in relation to each of these and other issues. The same is true of state liability rules adopted by treaty. The inertia that has limited progress since is particularly evident in the area of state liability. In the international civil liability field, more progress has been made, as considered below. Other treaties commit their parties to develop rules on liability or responsibility,⁸ or support international efforts.⁹ In respect of such rules as exist under customary or general international law, it will be seen that, in the context of very limited state practice, defining the parameters of each aspect of state liability is not an easy task.

STATE LIABILITY¹⁰

Introduction

It is a well-established principle of international law, recognised in Article 1 of the ILC Articles on the Responsibility of States for Internationally Wrongful Acts (2001), that every internationally wrongful act of a state entails the international responsibility of that state.¹¹ The same

⁷ See 1960 Paris Convention and 1963 Brussels Supplementary Convention and 2004 Protocols, p. 773; 1988 CRAMRA, pp. 767–8; and the 2001 ILC Articles on State Responsibility, p. 769. See also EU Parliament and Council Directive 2009/31/EC of 23 April 2009 on the geological storage of carbon dioxide (and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and 2008/1/EC and Regulation (EC) No. 1013/2006), Preamble, paras. 33, 34, 35 and 37 and Arts. 17, 18 and 20.

⁸ 1978 Kuwait Convention, Art. XIII (civil); 1982 UNCLOS, Art. 235(3); 1982 Jeddah Convention, Art. XIII (civil liability); 1983 Cartagena de Indias Convention, Art. 14; 1986 Noumea Convention, Art. 20; 1992 Baltic Convention, Art. 25; 1996 Protocol to the London Convention, Art. 15; 2000 Biosafety Protocol, Art. 27 (giving rise to the 2010 Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress, pp. 797–9); 2001 POPs Convention, Art. 17; 2003 Revised African Nature Convention, Art. XXIV; 2003 Tehran Convention, Art. 29; 2010 Nairobi Convention, Art. 16.

⁹ 1992 Watercourses Convention, Art. 7; 1992 Industrial Accidents Convention, Art. 13.

¹⁰ See generally M. Fitzmaurice, 'International Responsibility and Liability', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), ch. 41; M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010), Part V.

¹¹ See n. 1; for background, see J. Crawford, First Report on State Responsibility, UN Doc. A/CN.4/490 and Add. 1–7 (1998); Second Report, UN Doc. A/CN.4/498 and Add. 1–4 (1999); Third Report, UN Doc. A/CN.4/507 and Add.1–4 (2000); Fourth Report, UN Doc. A/CN.4/517 (2001). See generally J. Crawford, *The ILC's Articles on State*

principle applies to other international persons, including international organisations.¹² A state responsible for an internationally wrongful act is under an obligation to cease that act, if it is continuing, and to offer appropriate assurances and guarantees of non-repetition if the circumstances so require, and to make full reparation for the injury caused by the internationally wrongful act.¹³ The obligation to make reparation – sometimes referred to as a liability¹⁴ – is well established. As the Permanent Court of International Justice (PCIJ) stated as early as 1928 in the *Chorzów Factory* case:

it is a principle of international law, and even a general conception of law, that any breach of an engagement involves an obligation to make reparation. In Judgment No. 8 (1927) (PCIJ, Ser. A, No. 9, 21) . . . the Court had already said that reparation was the indispensable complement of a failure to apply a convention, and there is no necessity for this to be stated in the convention itself.¹⁵

The approach was affirmed – in the environmental context – by the ICJ in the *Case Concerning the Gabčíkovo–Nagyymaros Project*.¹⁶ The operation of these principles refers to rules of state responsibility and liability, although the term ‘state responsibility’ is perhaps misleading as it emerged at a time when states alone were considered as subjects of international law. To the extent that international organisations and other legal and natural persons may also be subjects of international law, the concept of ‘state responsibility’ may also inform the principle of the liability of other international persons under the rules of public international law.¹⁷

In the environmental field, no single instrument sets forth the generally applicable international rules governing responsibility and liability. The ILC’s Articles on State Responsibility bring together the rules of general international law, and they are applicable (to the extent they reflect customary law) with environmental rules established by treaties and other internationally applicable rules.

A number of non-binding instruments adopted in the environmental field have sought also to restate general principles. Principle 12 of the 1978 UNEP draft Principles affirmed that states are responsible for the fulfilment of their international environmental obligations relating to the

Responsibility: Introduction, Text and Commentaries (Cambridge: Cambridge University Press, 2002); J. Crawford, A. Pellet and S. Olleson (eds.), *The Law of International Responsibility* (Oxford: Oxford University Press, 2010).

¹² See the draft Articles on the Responsibility of International Organizations, with commentaries, *Official Records of the General Assembly*, 66th Session, Supplement No. 10 (A/66/10) (2011), Art. 3.

¹³ Articles on State Responsibility, Arts. 30 and 31.

¹⁴ The term ‘liability’ in international law has been described in a number of ways. For Dupuy and Smets, it means the ‘international obligation to compensate’ (P.-M. Dupuy and H. Smets, ‘Compensation for Damage Due to Transfrontier Pollution’, in OECD, *Compensation for Pollution Damage* (1981), 182). For Goldie, the meaning is wider in that it designates more generally ‘the consequences of a failure to perform [a] duty, or to fulfil the standards of performance required. That is, liability connotes exposure to legal redress once responsibility and injury arising from a failure to fulfil that legal responsibility have been established’ (L. F. E. Goldie, ‘Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk’, 16 *Netherlands Yearbook of International Law* 175 at 180 (1985)).

¹⁵ PCIJ (1928) Ser. A No. 17, at 47. ¹⁶ (1997) ICJ Reports 226, paras. 149ff.

¹⁷ The ILC has separately considered the responsibility of international organisations (see n. 12) and has also adopted Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities, *Yearbook of the International Law Commission* (2006-II), Part 2, which complement its draft Articles on the topic of prevention of transboundary harm from hazardous activities by providing for a regime of loss allocation in the event of unforeseeable or unavoidable accidents or incidents that give rise to damage across state borders.

utilisation of shared natural resources, and that they 'are subject to liability in accordance with applicable international law for environmental damage resulting from violations of these obligations caused to areas beyond their jurisdiction'.¹⁸ The WCED Legal Principles Group stated that:

[i]f one or more activities create a significant risk of substantial harm as a result of a transboundary environmental interference, and if the overall technical and socio-economic cost or loss of benefits involved in preventing or reducing such risks far exceeds in the long run the advantage which such prevention or reduction would entail . . . the state which carried out or permitted the activities shall ensure that compensation is provided should substantial harm occur in an area under national jurisdiction of another state or in an area beyond the limits of national jurisdiction.¹⁹

The Institut de Droit International (IDI) has made a singular contribution to this subject. Its 1987 resolution on transboundary air pollution recognised that 'states incur responsibility under international law for any breach of their international obligations with respect to transboundary air pollution', and called on states to conclude international treaties and enact laws and regulations to ensure an effective system of prevention and compensation for victims of transboundary air pollution.²⁰ In 1997, the IDI unanimously adopted a resolution on responsibility and liability under international law for environmental damage, which sought to 'identify, harmonize and to the necessary extent develop the principles of international law applicable to responsibility and liability in the context of environmental damage'.²¹ The resolution affirmed that 'the breach of an obligation of environmental protection established under international law engages the responsibility of the State . . . entailing as a consequence the obligation to reestablish the original position or to pay compensation', the latter obligation also being capable of arising from a rule of international law providing for strict liability on the basis of harm or injury alone.²²

General International Law

State liability for environmental damage is premised upon a breach of an international legal obligation established by treaty, or by a rule of customary international law, or possibly under general principles of international law. Article 2 of the ILC Articles on State Responsibility states:

There is an internationally wrongful act of a State when conduct consisting of an act or omission:

- (a) is attributable to the State under international law; and
- (b) constitutes a breach of an international obligation of the State.

¹⁸ Principle 12 calls on states to 'co-operate to develop further international law regarding liability and compensation for the victims of environmental damage arising out of utilisation of a shared natural resource and caused to areas beyond their jurisdiction'.

¹⁹ Art. 11; Art. 11(2) provides that states 'shall ensure that compensation is provided for substantial harm caused by transboundary environmental interferences resulting from activities carried out or permitted by that state notwithstanding that the activities were not initially known to cause such interferences'.

²⁰ Arts. 6 and 7. ²¹ 4 September 1997, 37 ILM 1473 (1998). ²² Art. 1.

The ILC Articles on State Responsibility elaborate on the circumstances in which an act or omission will be attributable to a state,²³ and indicate the circumstances in which a breach of an obligation will have occurred and that the state must be bound by the obligation in question 'at the time that act occurs'.²⁴ They also elaborate on the conditions that must be satisfied for one state to incur responsibility in connection with the acts of another state, for example where one state aids or assists another in the commission of an internationally wrongful act.²⁵ And they indicate the circumstances in which wrongfulness may be precluded, including where a state invokes necessity to justify an action to safeguard an essential interest against a grave and imminent peril.²⁶

For present purposes, the most pertinent international obligation is that requiring a state to prevent particular environmental harm, or to refrain from carrying out or permitting activities that could lead to environmental damage. As discussed in Chapter 6, the ICJ has affirmed that customary international law establishes an obligation to respect the environment of other states or of areas beyond national jurisdiction.²⁷ To a large extent, discussions of state liability are likely to be concerned with the consequences of a breach of this obligation, which encompasses the obligation not to cause significant harm. But responsibility and liability also arise in relation to other substantive obligations, as well as procedural requirements pertaining, for example, to access to information and the duty to carry out an environmental impact assessment. Additionally, some regimes (for example, the WTO system) establish their own rules and remedies governing the consequences of a failure to comply with the obligations therein established.²⁸

With regard to the obligation to prevent environmental damage, general international law requires at least four related issues to be addressed: (1) is the obligation aiming to prevent any transboundary environmental damage, or only transboundary environmental damage which has serious, or significant, or appreciable consequences?; (2) is the obligation based upon the need to prove fault or is it imposed by operation of absolute or strict liability?; (3) what reparation should be made for environmental damage?; and (4) what is the extent of liability and the measure of damages? Other legal requirements would need to be satisfied to bring an international claim, including (as appropriate) the exhaustion of local remedies rule, the nationality of claims rule, any rules governing limitation on the time within which a claim can be brought, and the rules governing attribution of state responsibility for the acts of public bodies and private persons.²⁹ In respect of these and other questions, state practice, case law, treaties and the writings of jurists do not provide conclusive answers. Each case must be judged on its own merits.

²³ Chapter II of the ILC's Articles (Arts. 4–11).

²⁴ Chapter III, Arts. 12 and 13. See also Arts. 14 (on breaches of a continuing character) and 15 (composite acts).

²⁵ Chapter IV, in particular Art. 16 (providing, *inter alia*, for international responsibility where aid or assistance is provided with knowledge of the circumstances of an internationally wrongful act). This confirms that a state (or international organisation) may be internationally responsible if it provides financial support (for example in the form of an export credit guarantee or insurance) in relation to the construction of a project the operation of which might, for example, contribute to a breach of an obligation relating to the equitable use of an international watercourse.

²⁶ Chapter V, in particular Art. 25. In the *Gabčíkovo-Nagymaros* case, the ICJ confirmed that a state of ecological necessity may be invoked to preclude wrongfulness (see Chapter 9, pp. 347–8). The other circumstances in which wrongfulness may be precluded are consent (Art. 20), self-defence (Art. 21), countermeasures (Art. 22), *force majeure* (Art. 23), distress (Art. 24) and compliance with a peremptory norm (Art. 26).

²⁷ Chapter 6, p. 210.

²⁸ Chapter 18. See P. Mavroides, 'Remedies in the WTO Legal System: Between a Rock and a Hard Place', 11 *European Journal of International Law* 763 (2000).

²⁹ See generally R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (Harlow: Longman, 1992, 9th edn), vol. I, Part I, 511–27 and 540–54.

Defining Environmental Damage

Defining environmental damage remains a complex issue. Two related issues need to be distinguished: (1) what constitutes environmental damage?; and (2) what level of environmental damage might give rise to liability?

In defining environmental damage, treaties and state practice reflect various approaches. A narrow definition of environmental damage is limited to damage to natural resources alone (air, water, soil, fauna and flora, and their interaction); a more extensive approach includes damage to natural resources *and* property that forms part of the cultural heritage; the most extensive definition includes landscape and environmental amenity.³⁰ On each approach, environmental damage generally does not include damage to persons or damage to property, although such damage can be consequential to environmental damage. Loss of environmental amenity, which may be included under the provisions of the 1993 Lugano Convention referring to the 'characteristic aspects of the landscape',³¹ could be treated as environmental damage or damage to property, depending on the definition of the latter. The 2010 Nagoya-Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol suggests an even broader approach: it defines 'damage' to mean 'an adverse effect on the conservation and sustainable use of biological diversity, taking also into account risks to human health'.³²

Environmental damage has been defined in instruments establishing civil liability, particularly in relation to oil pollution, hazardous wastes and activities, and genetically modified organisms.³³ In respect of state liability, the only treaty definition is provided by the 1988 CRAMRA, which defines damage to the Antarctic environment or ecosystem very broadly, to include:

any impact on the living or non-living components of that environment or those ecosystems, including harm to atmospheric, marine or terrestrial life, beyond that which is negligible or which has been assessed and judged to be acceptable pursuant to [the] Convention.³⁴

The concept of 'pollution', which is defined in the 1979 LRTAP Convention, the 1982 UNCLOS and elsewhere, provides some assistance but cannot be used interchangeably with 'environmental damage'. 'Air pollution' in the 1979 LRTAP Convention is defined by reference to deleterious effects (which are themselves undefined) on living resources and ecosystems, human health and material property, as well as interference with amenities and other legitimate uses of the environment.³⁵ The distinction between environmental damage (and compensable environmental damage) and pollution is illustrated by the 1993 Lugano Convention, which provides that an operator of a dangerous activity will not be liable for damage (impairment of the environment) caused by pollution at 'tolerable' levels under local relevant circumstances.³⁶ Other treaties require 'adverse effects', rather than pollution, to define the consequences of activities that are to be avoided. Like pollution, the term 'adverse effects' provides some assistance in establishing a

³⁰ See e.g. ILC Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities, Principle 2.

³¹ See also *ibid.*

³² Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, Nagoya, 15 October 2010, not in force, BS VI-11, Art. 2(2)(b).

³³ See pp. 797-9. ³⁴ Art. 1(15). The Convention has not entered into force.

³⁵ Art. 1(a); see also 1982 UNCLOS, Art. 1(4). ³⁶ See pp. 799-801.

basis for, but cannot be used interchangeably with, a general definition of environmental damage. The 1985 Vienna Convention defines ‘adverse effects’ in relation to ozone depletion as, inter alia, ‘changes in the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems, or on materials useful to mankind’.³⁷ The 1992 Climate Change Convention introduced a similar definition, although it reversed the order by placing deleterious effects on the environment before effects on human health, and extends the definition to include effects on socio-economic systems and human welfare.³⁸ More recently, and elaborately, the definition of ‘damage’ in the 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol speaks of ‘an adverse effect’ on biodiversity, which it describes as effect that: (i) ‘is measurable or otherwise observable taking into account, wherever available, scientifically established baselines recognized by a competent authority that takes into account any other human induced variation and natural variation’;³⁹ and (ii) is ‘significant’ when judged in light of factors such as the long-term or permanent change, the extent of qualitative or quantitative changes that adversely affect the components of biodiversity, reduction of the ability of components of biodiversity to provide goods and services, and the extent of any adverse effects on human health.⁴⁰ Thus, terms such as ‘pollution’ and ‘adverse effects’ help in determining the threshold beyond which environmental damage might trigger liability, but they do not actually define it.

Other state practice is limited. Environmental damage in the pure sense was not considered by the arbitral tribunal in the *Trail Smelter* case, although the *Lac Lanoux* arbitration implicitly recognised the possibility of pure environmental damage when it referred to changes in the composition, temperature or other characteristics of the waters of the River Carol which injured Spanish interests.⁴¹ Treating environmental damage as a separate head was recognised in the claims by Australia and New Zealand in the *Nuclear Tests* cases, and by Nauru in the *Case Concerning Certain Phosphate Lands in Nauru*. It was also recognised – implicitly – by the ICJ in the *Case Concerning the Gabčíkovo–Nagyymaros Project*.⁴² In its 2011 Advisory Opinion on *Responsibilities and Obligations in the Area*, ITLOS considered the concept of ‘damage’ in Article 139(2) of UNCLOS, which provides ‘damage caused by the failure of a State Party or international organization to carry out its responsibilities under this Part shall entail liability’.⁴³ Neither UNCLOS nor Regulations issued by the International Seabed Authority specify what constitutes compensable damage for the purposes of this provision. The Tribunal was of the view that ‘the damage in question would include damage to the [Deep Seabed] Area and its resources constituting the common heritage of mankind, and damage to the marine environment’.⁴⁴

Clear support for the provision of compensation for environmental damage under rules of state liability was provided by the UN Security Council in 1991 when it reaffirmed that Iraq was ‘liable under international law for any direct loss, damage, including environmental damage and the depletion of natural resources, or injury to foreign Governments, nationals and corporations’

³⁷ Art. 1(2). ³⁸ Art. 1(1). ³⁹ Art. 2(2)(b). ⁴⁰ Art. 2(3). ⁴¹ See Chapter 9, pp. 341–2.

⁴² (1997) ICJ Reports 226, para. 152 (‘Hungary is entitled to compensation for the damage sustained as a result of the diversion of the Danube, since Czechoslovakia, by putting into operation Variant C, and Slovakia, in maintaining it in service, deprived Hungary of its rightful part in the shared water resources, and exploited those resources essentially for their own benefit’).

⁴³ See further pp. 764–7. ⁴⁴ *Responsibilities and Obligations in the Area*, para. 179.

occurring as a result of its unlawful invasion and occupation of Kuwait.⁴⁵ UN Security Council Resolution 687, binding on the world, unequivocally determined that a state can be liable for the environmental damage and depletion of natural resources which result from unlawful use of force. Resolution 687 did not, however, define environmental damage or depletion of natural resources, or provide guidance to the Compensation Commission on their assessment, or the measure, of reparation or compensation.⁴⁶ The practice of the Claims Commission, which concluded its processing of claims in 2005, may provide some assistance to other international bodies, including courts and tribunals in defining environmental damage.⁴⁷

Threshold at which Environmental Damage Entails Liability

While all pollution or human activity having adverse effects might give rise to environmental damage, it is unlikely that all environmental damage results in state liability. There are no agreed international standards that establish a threshold for environmental damage that triggers liability and allows claims to be brought. State practice, decisions of international tribunals and the writings of jurists suggest that environmental damage must be 'significant' or 'substantial' (or possibly 'appreciable', which suggests a marginally less onerous threshold) for liability to be triggered.

A 1993 European Commission Green Paper on Environmental Liability identified several possibilities for determining the level of environmental damage triggering liability. These included defining environmental damage by reference to 'critical loads', which describe the point at which a pollutant becomes concentrated in the environment at a level which cannot be diluted or broken down by natural processes;⁴⁸ or by reference to environmental indicators and environmental accounting to measure environmental performance, pressures and conditions;⁴⁹ or by reference to existing international legislation which establishes quality standards for flora and fauna, water and air quality and which might be considered to establish a threshold for environmental damage above which a person responsible for the increase would be considered liable for the consequences. International instruments that set environmental quality standards, or product, emissions or process standards, may also provide some guidance as to the level of environmental damage considered to be tolerable or acceptable by the international community.

Some guidance may also be found in the exchange between the then President of the ICJ, Sir Humphrey Waldock, and the government of Australia in the *Nuclear Tests* case, reflecting a view that not every transmission of chemical or other matter into another state's territory, or into the global commons, will create a legal cause of action in international law.⁵⁰ The tribunal in the *Trail Smelter* case held that the injury must have a 'serious consequence' to justify a claim.⁵¹ In its claim against Australia, Nauru argued for a general principle based upon an obligation not to bring about changes in the condition of territory which will cause 'irreparable damage to, or

⁴⁵ Security Council Res. 687 (1991); see pp. 755–60.

⁴⁶ See pp. 755–60; and UNEP, *Report of the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities* (1996).

⁴⁷ See pp. 755–60, for a discussion of the practice of the Commission.

⁴⁸ COM (93) 47, 17 March 1993; see also 1992 Climate Change Convention, Art. 2 (stabilisation of greenhouse gas concentrations); 1985 SO₂ Protocol, Art. 2; and 1991 VOC Protocol, Art. 2 (critical levels).

⁴⁹ OECD Council Recommendation, *Environmental Indicators and Information*, C(90)165/final (1991).

⁵⁰ Chapter 7, pp. 255–6. ⁵¹ *Ibid.*, pp. 254–5.

substantially prejudice' the legal interest of another state.⁵² A similar approach underlay Hungary's Original Application in the *Case Concerning the Gabčíkovo–Nagymaros Project*.⁵³ The Canadian claim following the crash of Cosmos 954 was brought in the context of damage to land which made it 'unfit for use', a level of damage which supports the view that the impact on the environment must be more than nominal to establish a claim.⁵⁴ A number of the civil liability instruments, discussed below, establish thresholds for environmental damage or adverse effects which are 'significant',⁵⁵ or 'serious',⁵⁶ or above 'tolerable levels',⁵⁷ and the International Law Association's Montreal Rules call on states to prevent 'substantial injury'.⁵⁸ In its efforts to draft rules on liability for transboundary harm from hazardous activities, the ILC initially used the term 'appreciable' in describing the threshold of damage.⁵⁹ However, after a review of relevant international instruments, the Commission reached a different view. Its 2001 draft Articles on the Prevention of Transboundary Harm refer to the concept of 'significant transboundary harm',⁶⁰ and its later 2006 Draft Principles on the Allocation of Loss for Transboundary Harm are directed to compensation for 'significant damage'.⁶¹ In the commentaries to the 2006 Draft Principles, the ILC observed:

The term 'significant' is understood to refer to something more than 'detectable' but need not be at the level of 'serious' or 'substantial'. The harm must lead to a real detrimental effect on matters such as, for example, human health, industry, property, environment or agriculture in other States. Such detrimental effects must be susceptible of being measured by factual and objective standards.⁶²

Establishing the appropriate threshold turns on the facts of each case, and may vary according to local or regional circumstances.⁶³ The limited state practice supports the view that the threshold to be crossed may still be established at a relatively high level of environmental damage. The difficulty of agreeing a threshold was illustrated by the Chernobyl accident, which raised numerous issues over what constituted harmful levels of radioactivity in the absence of legally binding international standards. Several international guidelines establish radiation dose limits for the whole human body or for specific organs or tissues. The European Commission had

⁵² Chapter 12, pp. 606–8.

⁵³ Chapter 9, pp. 345–51. The question of the threshold for damage would also have been in issue in the case of *Aerial Herbicide Spraying* brought by Ecuador against Colombia before the ICJ, however, the case was withdrawn in 2013 at the request of Ecuador.

⁵⁴ See p. 763. ⁵⁵ 1992 Watercourses Convention, Art. 1(2).

⁵⁶ 1992 Industrial Accidents Convention, Art. 1(d).

⁵⁷ 1993 Lugano Convention, Art. 8(d). See also the 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol that speaks of 'adverse effects' (pp. 797–9).

⁵⁸ Art. 3(1).

⁵⁹ UN Doc. A/CN.4/428 and Add. 1; *Yearbook of the International Law Commission* (1990–II), Part 1 (Documents of the 42nd Session) A/CN.4/SER.A/1990/Add.1, 83 at 89.

⁶⁰ ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 2001, *Yearbook of the International Law Commission* (2001–II), Part 2, Arts. 1 and 2, and see the commentary to Art. 2, para. 4.

⁶¹ UN Doc. A/61/10; ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, *Yearbook of the International Law Commission* (2006–II), Part 2, Principle 2.

⁶² *Ibid.*, commentary to Principle 2, para. 2. ⁶³ See *ibid.*, para. 3.

published recommendations on dose levels as guidelines for national authorities in setting specific levels at which products might be deemed unsafe (intervention levels),⁶⁴ and similar guidelines had also been prepared by the International Commission on Radiological Protection (ICRP),⁶⁵ the WHO,⁶⁶ the IAEA⁶⁷ and the UN Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). At the time of the Chernobyl accident, little consideration had been given to the control of foodstuffs contaminated by an accidental release of radioactivity, and national authorities set their own intervention levels according to a range of different standards,⁶⁸ which led to disputes on the permissibility of intervention measures which affected international trade. The European Commission initially suspended the import of certain agricultural products from Central and Eastern Europe, and then laid down the maximum permitted level of radioactivity for products originating from these countries.⁶⁹ Individual EU member states adopted their own intervention levels that were used as the basis for undertaking national compensation to affected farmers and other businesses.⁷⁰

The absence of generally accepted standards on safe levels of radioactivity made it difficult to assess whether these measures were justified, and resulted in confusion, concern and public suspicion, as well as constraints on international food trade.⁷¹ The FAO subsequently proposed 'Interim International Radionuclide Action Levels for Food' (IRALFs) to cover food being traded internationally, which, while non-binding and *ex post facto*, provided a useful standard for assessing whether the increases in radioactivity caused by the Chernobyl accident were harmful to foodstuffs and whether intervention levels were justified under international law.⁷²

Liability can be closely related to the adoption of regulatory standards. As the international community adopts such standards, the task of identifying the level of compensable environmental damage becomes easier. Conversely, in the absence of international standards concerning the quality of the environment, including conservation of flora and fauna, states will set their own standards, resulting in divergences with resulting economic and environmental consequences.

⁶⁴ Radiological Protection Criteria for Controlling Doses to the Public in the Event of Accidental Releases of Radioactive Material: A Guide on Emergency Reference Levels of Dose from the Group of Experts Convened under Article 41 of the EURATOM Treaty (1982).

⁶⁵ 'Protection of the Public in the Event of Major Radiation Accidents: Principles for Planning', 40 *Annals of the ICRP*, No. 2, 5–7 and 12–14 (1984).

⁶⁶ Nuclear Power: Principles of Public Health Actions for Accidental Releases (1984).

⁶⁷ Principles for Establishing Intervention Levels for the Protection of the Public in the Event of a Nuclear Accident or Radiological Emergency (IAEA Safety Series No. 72, 1985).

⁶⁸ See FAO, 'Report of the Expert Consultation on Recommended Limits for Radionuclide Contamination of Foods' (1987), Table II, for examples of varying post-Chernobyl 'action levels' applied by some countries for certain radionuclides (in terms of becquerels per kilogram or litre (Bq/kg or Bq/l)) in imported foods, as at December 1986.

⁶⁹ Council Regulation (EEC) No. 86/1707, OJ L146, 31 May 1986, 88; the Regulation was extended on 30 September 1986 and on 27 February 1987 by Council Regulations (EEC) Nos. 86/3020 and 87/624. Council Regulation (EC) No. 733/2008 of 15 July 2008, as amended by Council Regulation (EC) No. 1048/2009 of 23 October 2009, establishes the current conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power station and will expire on 31 March 2020.

⁷⁰ West Germany, Equity Guideline, *Bundesanzeiger* of 27 May 1986, No. 95, 6417; United Kingdom, Food Protection (Emergency Prohibitions) (England) Order 1986 (SI 1986 No. 1411).

⁷¹ FAO, 'Report of the Expert Consultation on Recommended Limits for Radionuclide Contamination of Foods', 3.

⁷² The IRALF for Iodine-131 was set at 400 Bq/kg; the EU imposed import restrictions on milk of 500 Bq/kg and on vegetables of 350 Bq/kg.

Standard of Care

If there is an obligation to prevent significant, substantial or serious environmental damage, what is the standard of care applicable to that obligation? Options include fault (based upon intention or negligence), strict liability ('essentially a *prima facie* responsibility, and various qualifications or defences may be available')⁷³ and absolute liability ('for which there can be no mode of exculpation').⁷⁴ Although this question has received considerable attention from writers,⁷⁵ it is reasonable to conclude that there 'is probably no single basis of international responsibility, applicable in all circumstances, but rather several, the nature of which depends on the particular obligation in question'.⁷⁶ The obligation in question may distinguish between ultrahazardous activities and other activities.⁷⁷ This approach can be justified on policy grounds: dangerous activities are more likely to cause serious environmental damage, and a strict or absolute obligation is more likely to provide an incentive to states to adopt special precautions when engaging in or permitting such activities.

International law remains inconclusive on general rules governing the standard of care to be shown in fulfilling international environmental obligations. Principle 21 of the Stockholm Declaration and Principles 2 and 13 of the Rio Declaration do not provide guidance either way, and the decisions of international tribunals in the *Trail Smelter* case, the *Corfu Channel* case, the *Lac Lanoux* case and the *Nuclear Tests* cases can be interpreted to support conclusions of absolute/strict liability or fault-based liability. In respect of ultrahazardous activities, certain treaties do support a standard of absolute or strict, liability. The 1972 Space Liability Convention supports absolute liability,⁷⁸ and, in reliance on this provision and general principles of international law, following the Cosmos 954 accident Canada claimed that 'the principle of absolute liability applies to fields of activity having in common a high degree of risk . . . [and] has been accepted as a general principle of international law'.⁷⁹ The 1988 CRAMRA also supports liability without the need to prove fault.⁸⁰ The standard of care required by the provisions of UNCLOS establishing liability in respect of damage caused by the failure of a state party to carry out its responsibilities under Part XI was considered by ITLOS in its Advisory Opinion on *Responsibilities and Obligations in the Area*.⁸¹ In relation to these provisions, the Tribunal held 'the liability of sponsoring States arises from their failure to carry out their own responsibilities and is triggered by the damage caused by sponsored contractors' and that there 'must be a causal link between the sponsoring State's failure and the damage, and such a link cannot be presumed'.⁸² The Tribunal rejected the argument that the sponsoring state was subject to strict liability under Article 139(2) of UNCLOS, noting that 'liability for damage of the sponsoring State arises only from its failure to meet its obligation of due diligence. This rules out the application of strict liability.'⁸³

⁷³ I. Brownlie, *System of the Law of Nations*, Part 1, 'State Responsibility' (Oxford: Clarendon Press, 1983), 44.

⁷⁴ *Ibid.*; see L. F. E. Goldie, 'Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk', 16 *Netherlands Yearbook of International Law* 175 (1985).

⁷⁵ See the discussion by Brownlie, *System of the Law of Nations*, 40–6, and the literature cited therein.

⁷⁶ Jennings and Watts, *Oppenheim's International Law*, vol. I, 509.

⁷⁷ On 'ultrahazardous' and 'dangerous' activities, see Chapter 12, p. 573. ⁷⁸ Art. II. ⁷⁹ 18 ILM 907 (1992).

⁸⁰ Art. 8. ⁸¹ UNCLOS, Art. 139(2) and Annex III, Art. 4(4).

⁸² *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011), para. 184.

⁸³ *Ibid.*, para. 189.

Strict liability for ultrahazardous activities might be considered a general principle of law as it is to be found in the national law of many states in relation to ultrahazardous activities.⁸⁴ Under English law, 'a person who for his own purposes brings on his land and collects and keeps there anything likely to do mischief if it escapes, must keep it in at his peril, and, if he does not do so, is *prima facie* answerable for all the damage which is the natural consequence of its escape'.⁸⁵ Many civil liability treaties also adopt the principle of strict liability for hazardous activities, including nuclear activities, hazardous waste shipments and the carriage of oil by sea, as well as dangerous activities generally.⁸⁶ Strict liability is also supported by Jenks, who considered that, in relation to nuclear damage, the principle of absolute liability 'is generally accepted, but the expression is somewhat misleading in that it does not exclude the possibility of exceptions'.⁸⁷ The ILC's 1996 draft Articles on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law proposed that a state of origin would be strictly liable for harm to the environment and the resulting harm to property and persons.⁸⁸ This proposal was controversial, and when the Commission was requested to resume work on liability by the General Assembly in 2001 it pursued a different tack.⁸⁹ Its 2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities do not impose state liability, but rather call for a state of origin to impose liability on operators or other entities for significant damage caused to persons, property or the environment, which liability 'should not require proof of fault'.⁹⁰

For general industrial and other activities that are not ultrahazardous or dangerous, it is less easy to argue for a standard of care based upon strict or absolute liability. In considering this matter the OECD's Environment Committee has observed that there is a 'custom based rule of *due diligence* imposed on all states in order that activities carried out within their jurisdiction do not cause damage to the environment of other states', which includes establishing and applying an effective system of environmental law and regulations, and principles of consultation and notification.⁹¹ Due diligence was identified by the ICJ in the *Pulp Mills* case as the applicable standard in respect of 'obligations of conduct' imposed under international environmental treaties, i.e. obligations to adopt and enforce regulatory and administrative measures to achieve a given environmental goal.⁹² Similarly, in the Advisory Opinion on *Responsibilities and Obligations in the Area*, ITLOS observed that the expression 'to ensure' is 'often used in international legal instruments to refer to obligations in respect of which, while it is not considered reasonable to make a State liable for each and every violation committed by persons

⁸⁴ A. Tunc (ed.), *International Encyclopedia of Comparative Law* (Leiden: Brill/Nijhoff, 1986), vol. XI, ch. V.

⁸⁵ *Rylands v. Fletcher* (1868) LR 3 HL 330. ⁸⁶ See pp. 772ff.

⁸⁷ W. Jenks, 'The Scope and Nature of Ultra-Hazardous Liability in International Law', 117 *Recueil des Cours* 99 at 144 (1966).

⁸⁸ See pp. 746-7; Arts. 24, 26 and 28.

⁸⁹ See also ITLOS, Advisory Opinion on *Responsibilities and Obligations in the Area*, para. 209, noting that the ILC's efforts have not resulted in provisions entailing state liability for lawful acts.

⁹⁰ See p. 747; Principle 4(2).

⁹¹ OECD, Report by the Environment Committee, 'Responsibility and Liability of States in Relation to Transfrontier Pollution' (1984), 4. See also ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 2001, *Yearbook of the International Law Commission* (2001-II), Part 2, Art. 3, para. 7.

⁹² *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (2010) ICJ Reports 14, para. 187.

under its jurisdiction, it is equally not considered satisfactory to rely on mere application of the principle that the conduct of private persons or entities is not attributable to the State under international law'.⁹³

The *Pulp Mills* decision and ITLOS Advisory Opinion also clarify what a due diligence standard might entail. The ICJ described 'an obligation to act with due diligence' as one 'which entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators'.⁹⁴ The Court also referred to 'due diligence, and the duty of vigilance and prevention which it implies' as not being exercised 'if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works'.⁹⁵

For its part, ITLOS in its Advisory Opinion indicated that due diligence is 'a variable concept', which may change over time in response to developments in scientific and technological knowledge, as well as in relation to the risks involved in the activity.⁹⁶ Accordingly, the Tribunal stated that 'the standard of due diligence has to be more severe for riskier activities'.⁹⁷ ITLOS also considered that the precautionary approach is an integral part of the general obligation of due diligence of sponsoring states under UNCLOS, which requires them to take all appropriate measures to prevent damage that might result from the activities of contractors that they sponsor. This obligation applies in situations where scientific evidence concerning the scope and potential negative impact of the activity in question is insufficient but where there are plausible indications of potential risks. A sponsoring state would not meet its obligation of due diligence if it disregarded those risks, as such disregard would amount to a failure to comply with the precautionary approach.⁹⁸

ITLOS expanded on this analysis in its 2015 *Sub-Regional Fisheries Commission Advisory Opinion*.⁹⁹ Considering the nature of the 'due diligence' obligation under Articles 58 and 62 UNCLOS on flag state parties to take all necessary measures to prevent IUU fishing by fishing vessels flying its flag,¹⁰⁰ the Tribunal advised:

While the nature of the laws, regulations and measures that are to be adopted by the flag State is left to be determined by each flag State in accordance with its legal system, the flag State nevertheless has the obligation to include in them enforcement mechanisms to monitor and secure compliance with these laws and regulations. Sanctions applicable to involvement in IUU fishing activities must be sufficient to deter violations and to deprive offenders of the benefits accruing from their IUU fishing activities.¹⁰¹

⁹³ *Ibid.*, para. 112, citing examples such as Arts. 139 and 194 of UNCLOS. ⁹⁴ *Ibid.*, para. 197.

⁹⁵ *Ibid.*, para. 204. See also *Costa Rica v. Nicaragua* cases, para. 104. On environmental impact assessment, see Chapter 14.

⁹⁶ ITLOS, Advisory Opinion on *Responsibilities and Obligations in the Area*, para. 117. ⁹⁷ *Ibid.*

⁹⁸ *Ibid.*, para. 131.

⁹⁹ *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC)*, Case No. 21, Advisory Opinion of 2 April 2015, available at www.itlos.org/en/cases/list-of-cases/case-no-21. See Chapter 11, pp. 546–8.

¹⁰⁰ See further the discussion of IUU fishing in Chapter 11, pp. 546–8. ¹⁰¹ Para. 138.

Reparation

The principle is well established that the perpetrator of an internationally wrongful act is under an obligation to make reparation for the consequences of the violation. As expressed in the judgment of the *Chorzów Factory* case, the PCIJ stated that:

The essential principle contained in the actual notion of an illegal act – a principle which seems to be established by international practice and in particular by the decisions of arbitral tribunals – is that reparation must, as far as possible, wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed. Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by restitution in kind or payment in place of it – such are the principles which should serve to determine the amount of compensation due for an act contrary to international law.¹⁰²

The approach is now reflected in the ILC Articles on State Responsibility (2001), which envisage that reparation for an injury caused by an internationally wrongful act shall take the form of restitution, compensation and satisfaction, either singly or in combination.¹⁰³ Restitution is aimed at re-establishing the situation that existed before the wrongful act was committed, provided and to the extent that it is not materially impossible and does 'not involve a burden out of all proportion to the benefit deriving from restitution instead of compensation'.¹⁰⁴ Compensation is to be provided for damage that is not made good by restitution, and should cover 'any financially assessable damage including loss of profits insofar as it is established'.¹⁰⁵ Satisfaction is to be provided if the injury cannot be made good by restitution or compensation, for example by an acknowledgment of the breach, an expression of regret or a formal apology.¹⁰⁶

In most environmental cases, the victim will be seeking an end to the harmful act, or restitution, or financial compensation to cover the costs associated with material damage to environmental resources (pure environmental damage) and consequential damage to people and property (consequential environmental damage), including restoration or reinstatement.¹⁰⁷ In relation to restitution, it will be necessary to identify the baseline conditions prior to which the damage occurred, which may be difficult. Compensation raises the problem of assessing the measure of environmental damage: should it be by reference to the costs of measures of reinstatement, or on the basis of an abstract quantification calculated in accordance with a theoretical model, or on some other basis? The problem arises because environmental damage does not fit easily with the traditional approaches of civil and state liability, which are designed

¹⁰² PCIJ (1927) Ser. A No. 17, at 47. ¹⁰³ Part I, Chapter II, Art. 34. ¹⁰⁴ *Ibid.*, Art. 35. ¹⁰⁵ *Ibid.*, Art. 36.

¹⁰⁶ *Ibid.*, Art. 37. In the *Rainbow Warrior (New Zealand v. France)* case, France was required to give a 'formal and unqualified apology' to New Zealand for the sinking of Greenpeace's vessel in Auckland Harbour, and ordered to pay \$7 million USD in compensation: 82 ILR 500 at 575–7 (1990); 33 *Annuaire Français de Droit International* 922–3 (1987) and 34 *Annuaire Français de Droit International* 896–8 (1988).

¹⁰⁷ For example, in its Original Application in the *Gabčíkovo–Nagymaros Project* case, Hungary claimed that Czechoslovakia was under an obligation to 'cease the internationally wrongful act, re-establish the situation which would have existed if the act had not taken place and provide compensation for the harm which resulted from the wrongful act' (Hungary, Original Application, 22 October 1992, para. 32). The 1997 IDI Resolution states that '[t]he fact that environmental damage is irreparable or unquantifiable shall not result in exemption from compensation' (Art. 29).

to compensate an injured person by requiring the responsible person to pay the economic costs of resulting damage, which is frequently calculated by reference to a depreciation of the economic value of the damaged item, or the cost of repairing the damage. Pure damage to the environment may be incapable of calculation in economic terms, although it may have a non-economic value requiring restoration to the state prior to the damage occurring.¹⁰⁸ Even here, difficulties of law and policy will continue to exist, as the European Commission's 1993 Green Paper on Environmental Liability recognised:

An identical reconstruction may not be possible, of course. An extinct species cannot be replaced. Pollutants emitted into the air or water are difficult to retrieve. From an environmental point of view, however, there should be a goal to clean-up and restore the environment to the state which, if not identical to that which existed before the damage occurred, at least maintains its necessary permanent functions . . . Even if restoration or clean-up is physically possible, it may not be economically feasible. It is unreasonable to expect the restoration to a virgin state if humans have interacted with that environment for generations. Moreover, restoring an environment to the state it was in before the damage occurred could involve expenditure disproportionate to the desired results. In such a case it might be argued that restoration should only be carried out to the point where it is still 'cost-effective'. Such determinations involve difficult balancing of economic and environmental values.¹⁰⁹

The rules of international law relating to reparation for environmental damage remain undeveloped, as evidenced by the general lack of legal precedents. Similar limitations exist at the national level. In the United States, restoration of damaged environments has been described as a 'fledgling art' with the cost and success of particular restoration measures being 'highly uncertain'.¹¹⁰ Alternatives to valuing the environment for the purpose of assessing claims include the price that the environmental resource commands in the market, the economic value attached to the use of environmental resources (such as methods of costing travel relying on expenditures made by an individual to visit and enjoy a resource, or a hedonic pricing method which takes the extra market value enjoyed by private property with certain environmental amenities and assumes that public resources with comparable amenities have similar economic values), or contingent valuation methods to measure the willingness of individuals to pay for environmental goods such as clean air or water or the preservation of endangered species (usually taken from public opinion surveys).¹¹¹

The efforts of the UN Compensation Commission in applying Security Council Resolution 687 (see below) made substantial progress in developing this aspect of international law, building on

¹⁰⁸ M. Bowman, 'Biodiversity, Intrinsic Value, and the Definition and Valuation of Environmental Harm', in M. Bowman and A. Boyle (eds.), *Environmental Damage in International and Comparative Law* (Oxford: Oxford University Press, 2002), 42.

¹⁰⁹ Communication from the EC Commission to the EC Council and European Parliament on Environmental Liability, 32, para. 5.2 (1993).

¹¹⁰ R. L. Revesz and R. B. Stewart (eds.), *Analyzing Superfund: Economics, Science, and Law* (Washington, DC: Resources for the Future, 1995); R. B. Stewart, 'Liability for Natural Resource Injury: Beyond Tort', *ibid.*, 220; K. Bradshaw, 'Settling for Natural Resource Damages', 40 *Harvard Environmental Law Review* 211 (2016).

¹¹¹ See generally Stewart, 'Liability for Natural Resource Injury', 220. See also D. Pearce, A. Markandya and E. B. Barbier, *Blueprint for a Green Economy* (London: Earthscan, 1989), 51–81; M. Getzner, C. Spash and S. Stagl, *Alternatives for Environmental Valuation* (London: Routledge, 2005).

the precedents established by the *Trail Smelter* case and limited state practice, including the submission of claims. The approach taken by some of the civil liability precedents may also provide useful analogies in relation to state liability.

Trail Smelter Case (1941)

The tribunal in the *Trail Smelter* case found that the smelter at Trail in Canada had caused damage in the United States. The tribunal was called upon to decide what indemnity should be paid for the damage.¹¹² In applying the 'law and practice followed in dealing with cognate questions in the United States of America as well as international law and practice',¹¹³ the tribunal considered the indemnity claimed by the United States for damage occurring after January 1932 in respect of: (a) cleared land and improvements thereon; (b) uncleared land and improvements thereon; (c) livestock; (d) property; (e) the wrong done to the United States in violation of sovereignty; (f) interest on the \$350,000 USD recommended as damages in the report of the International Joint Commission delivered on 28 February 1931 but not paid until 2 November 1935; and (g) business enterprises. The United States did not put forward a pure environmental damage claim, although this could be read into the claim in respect of 'uncleared land'. In its 1938 award, the tribunal found that damage to cleared land used for crops had occurred in varying degrees from 1932 to 1936 but not in 1937, and adopted the measure of damages applied by the US courts for nuisance or trespass, namely 'the amount of reduction in the value of use or rental value of the land caused by fumigations'.¹¹⁴ The tribunal also recognised some evidence of 'special damage' (rust and destruction of metalwork) which entitled owners to a nominal amount.

As to damage for cleared land not used for crops and to all uncleared land other than that used for timber, the tribunal adopted the same measure of damages, and rejected the US claim to the value of uncleared land at a ratio of loss measured by the reduced crop yield on cleared land. No damages were awarded for pasture lands, and as to cleared land used for merchantable timber the measure of damages was also that applied by US courts, namely 'the reduction in the value of the land due to such destruction of timber'. For growing timber, the measure of damages was 'the reduction in the value of the land itself due to such destruction and impairment',¹¹⁵ but the tribunal rejected the claim for damages due to lack of reproduction. On the basis of these considerations, the tribunal awarded \$62,000 USD for damage to cleared and uncleared land (other than land used for timber), and \$16,000 USD for damage to uncleared land used for timber.

The tribunal rejected the claim for damage to livestock (due to the failure to prove injury from fumes from the smelter), damage to property in the town of Northport (lack of proof) and damage to business enterprises ('too indirect, remote and uncertain to be appraised and not such for which an indemnity can be awarded').¹¹⁶ The tribunal also rejected the US claim for damages from the 'injurious effects' to the Columbia River caused by the disposal of waste slag. The tribunal held that it was 'unnecessary to decide whether the facts proven did or did not constitute an infringement or violation of the sovereignty of the United States under international law independent of the Convention' establishing the tribunal, since the Convention only submitted to the tribunal the question of damages caused by the Trail Smelter in the state of Washington, and it interpreted the intention of the parties as evidenced in the Convention not to include moneys

¹¹² Chapter 7, pp. 254–5. ¹¹³ See 1935 Convention, Art. IV, Chapter 7, pp. 254–5.

¹¹⁴ *Trail Smelter* award, 199; see Chapter 7, pp. 254–5. ¹¹⁵ *Ibid.*, 204. ¹¹⁶ *Ibid.*, 206.

spent by the US in investigating the problems, since the Convention used the words 'damages caused by the Trail Smelter'.¹¹⁷ For the same reason, the tribunal rejected the claim for interest on the earlier payment of \$350,000 USD.

In its 1941 award, the tribunal held that the United States had failed to prove that any fumigation between 1 October 1937 and 1 October 1940 had caused injury to crops, trees or otherwise and that no indemnity was due.¹¹⁸ As to any damage occurring after 1 October 1940, irrespective of compliance with the regime it had established, the tribunal held that an indemnity should be paid for such damage when and if the two governments arranged for the settlement of claims under Article XI of the Convention, as well as up to \$7,500 USD per year to be paid to the United States as compensation in order to ascertain whether damage had occurred, provided that the two governments had determined under Article XI of the Convention that damage had occurred in the year in question.

The two awards of the tribunal did not deal with pure environmental damage per se, and rejected the opportunity to assess damages in respect of injurious consequences to the Columbia River. The tribunal basically took a market value approach that did not take account of loss of environmental amenity. In so doing, the tribunal took the measure of damage used by US courts, an approach which would most likely produce a different result today because of changes in US law, which reflect loss of environmental amenity or natural resources as a separate measure of damage.

State Practice

In January 1955, the US government paid \$2 million USD to Japan for the 'purposes of compensation for the injuries or damage sustained' by Japanese nationals as a result of thermonuclear tests carried out by the US near the Marshall Islands in March 1954.¹¹⁹ The payments were made *ex gratia* and 'without reference to legal liability', and it is unclear whether the compensation included an amount for damage to the marine environment or loss of environmental amenity.¹²⁰ In its argument in the *Nuclear Tests* case, Australia argued that, if the existence of harm or damage was essential to liability, it could point to, inter alia, the 'harm, all the more real for being incapable of precise evaluation, to which its population, both present and future, and environment have been subjected for no benefit to them'.¹²¹ In April 1981, the Soviet Union agreed to pay, and Canada agreed to accept, C\$3 million in final settlement of the Canadian claim, under the 1972 Space Liability Convention and general principles of international law, for damage incurred by way of expense in locating, recovering, removing and testing radioactive debris and for cleaning up affected areas following the crash of Cosmos 954 in January 1978.¹²² And Nauru claimed 'appropriate reparation' in respect of the losses it had suffered as a result of Australia's alleged breaches of legal obligations relating to, inter alia, changes in the condition of Nauru's territory causing irreparable damage.¹²³

Following the Chernobyl accident, no state made a formal claim against the Soviet Union for damage resulting from radioactive fallout, although several reserved their right to do so, including

¹¹⁷ *Ibid.*, 207. ¹¹⁸ *Ibid.*, 709 and 712.

¹¹⁹ See E. Margolis, 'The Hydrogen Bomb Experiments and International Law', 64 *Yale Law Journal* 629 at 638-9 (1955).

¹²⁰ *Ibid.*, 639. ¹²¹ Oral Arguments of Australia, *Australia v. France*, ICJ Pleadings (Nuclear Tests) 481 (1973).

¹²² See p. 763.

¹²³ *Certain Phosphate Lands in Nauru (Nauru v. Australia)*, Preliminary Objections, Judgment (1992) ICJ Reports 240 at 244.

the Federal Republic of Germany,¹²⁴ as they subsequently paid large sums of compensation to persons within their jurisdictions affected by the fallout.¹²⁵ Their reasons for not bringing claims reflected political and legal uncertainties. According to the Swedish Government:

In terms of treaties there is no international agreement existing, whether bilateral or multilateral, on the basis of which a Swedish claim for damages against the USSR could be conceived. Insofar as customary international law is concerned, principles exist which might be invoked to support a claim against the USSR. The issues involved, however, are complex from the legal as well as the technical point of view and warrant careful consideration. In present circumstances, the Government has felt that priority should be given, in the wake of the Chernobyl accident, to endeavours of another nature.¹²⁶

The position of the United Kingdom government was complicated by outstanding disputes relating to the problem of acid rain in Scandinavia, contamination of the Irish Sea by nuclear waste from the Windscale/Sellafield nuclear plant, and alleged damage to Australian territory, from the nuclear tests carried out by the United Kingdom in the 1950s. On 21 July 1986, the Secretary of State for Foreign and Commonwealth Affairs in a written answer in the House of Commons said:

On 10 July we formally reserved our right with the Soviet government to claim compensation on our own behalf on behalf of our citizens for any losses suffered as a consequence of the accident at Chernobyl. The presentation of a formal claim, should we decide to make one, would not take place until the nature and full extent of any damage suffered had been assessed.¹²⁷

Three months later, the Minister of State for Agriculture, Fisheries and Food stated that:

We have reserved our position on whether the USSR will be required – as it should be if the case is proved – to pay compensation.¹²⁸

The position was put thus by the Parliamentary Under-Secretary of State for Scotland:

The USSR is not a party to any of the international conventions relating to third party liability in nuclear energy, and is therefore not subject to any specific treaty obligation to compensate for damage caused outside its national boundaries.¹²⁹

¹²⁴ Communication between the Embassy of the Federal Republic of Germany in London and P. Sands, 8 December 1987.

¹²⁵ By 1 December 1987, the United Kingdom had paid £4,950,199 in compensation (figures supplied by Ministry of Agriculture, Fisheries and Food); the Federal Republic of Germany had paid DM390 million in compensation (figures supplied by London Embassy of the Federal Republic of Germany); and Sweden had paid SK204 million in compensation to farmers, up to 30 June 1987, and SK117 million to the reindeer industry during the budget year 1986/7 (figures supplied by Swedish Embassy in London).

¹²⁶ Correspondence with the Swedish Embassy in London, 10 December 1987.

¹²⁷ *Hansard*, House of Commons, 21 July 1986, vol. 102, col. 5(W). ¹²⁸ *Ibid.*, 24 October 1986, vol. 102, col. 1455.

¹²⁹ *Ibid.*, 16 November 1987, vol. 122, col. 894.

Following the accident, the IAEA convened various meetings on liability for nuclear damage, which led to the establishment of a Standing Committee on Nuclear Liability.¹³⁰ The IAEA Board of Governors requested the Director General to invite comments from member states on the question of international liability, which elicited responses from thirty-two states representing a broad range of views on the relevant rules of international law.¹³¹ Responses of states were of four types: (1) five states considered that principles or rules of international law existed upon which state liability for nuclear damage could be established;¹³² (2) one state saw lacunae;¹³³ (3) twenty-four states expressed no view either way;¹³⁴ and (4) two states considered or suggested that norms of liability could only be based upon treaty.¹³⁵ It is therefore difficult to discern firm principles arising from the Chernobyl experience.

In the *Case Concerning the Gabčíkovo–Nagymaros Project*, the ICJ confirmed that Hungary was entitled to ‘compensation for the damage sustained as a result of the diversion of the Danube’, but did not specifically indicate that Hungary was entitled to reparation for purely environmental damages.¹³⁶ As regards the measure of compensation, the Court merely observed that ‘the issue of compensation could satisfactorily be resolved in the framework of an overall settlement if each of the Parties were to renounce or cancel all financial claims and counter-claims’.¹³⁷ The judgment therefore provides no practical guidance on how to calculate the measure of such environmental damage. This reluctance is consistent with the limited international practice concerning reparation for environmental damage at the interstate level, outside of the work of the UN Compensation Commission.

In April 2002, the Marshall Islands Nuclear Claims Tribunal made an award of \$324,949,311 USD to the people of Enewetak, as ‘just and adequate’ settlement for claims of Marshall Islanders in respect of damages to land arising out of the nuclear testing programme carried out by the United States between 1946 and 1958.¹³⁸ The award included payments in respect of past and future loss of use (\$199,154,811 USD), restoration to a ‘safe and productive state’ (\$91,710,000 USD) and hardship as a result of relocation (\$34,084,500 USD). The Tribunal applied standards agreed by the parties, in particular standards applicable under US law. In relation to restoration, the Tribunal accepted the position adopted by the IAEA to the effect that ‘policies and criteria for radiation protection of populations outside national borders from releases of radioactive

¹³⁰ See pp. 776–7. ¹³¹ IAEA Docs. GOV/INF/550 (1988); Add.1 (1988); and Add.2 (1989).

¹³² Canada (‘the existence of such general principles has been recognised in diplomatic practice, by scholars, in judicial and arbitral decisions, in resolutions and declarations of international conferences, and in many bilateral and multilateral treaties’ (GOV/INF/550, 6)); Chile; Federal Republic of Germany (‘[i]t is undisputed that states are liable for nuclear damage caused by conduct that is contrary to international law’ (GOV/INF/550, 23)); Thailand (‘there exist principles of customary international law that can be applicable to an incident which results in radiological releases beyond the limits of national jurisdiction’ (GOV/INF/550, 35)); and Guatemala (recognising the possibility (GOV/INF/550/Add.2, 2)).

¹³³ Austria.

¹³⁴ Algeria, Bulgaria, Cameroon, China, Colombia, Czechoslovakia, Egypt (supporting ‘a widening of the scope of liability in time and place’, GOV/INF/550, 21), Finland, German Democratic Republic, Hungary, Ireland, Italy (but noting ‘the absence of a well-established set of customary rules accepted by the state community as such’, GOV/INF/550, 25), Luxembourg, Mexico, Netherlands, Norway, Pakistan, Poland, the Soviet Union, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

¹³⁵ Belgium (‘the situation in international law is more or less comparable to what we find in ancient Roman law, which did not know any general principle of liability and which only penalised the acts contained in a legal list of illicit acts’, citing J. A. Salmon, *International Liability* (1979–80, 3rd edn), vol. 1, 6, in GOV/INF/550, 5) and Spain.

¹³⁶ (1997) ICJ Reports 226, para. 151. ¹³⁷ *Ibid.*, para. 152. ¹³⁸ Award of 13 April 2000, 39 ILM 1214 (2000).

substances should be at least as stringent as those for the population within the country of release', and accordingly applied the current standards applied by the US Environmental Protection Agency.¹³⁹

UN Compensation Commission

The UN Compensation Commission was established in 1991 to provide reparation for the consequences of Iraq's unlawful invasion of Kuwait.¹⁴⁰ Its decisions concerning restoration and compensation for environmental claims provide a unique source of contemporary international legal practice offering important lessons in an area 'where precedents are few and far between'.¹⁴¹ The Commission established criteria for claims in respect of environmental damage and the depletion of natural resources based upon a Working Paper submitted by the United States, which in turn drew upon its domestic legislation, including provisions of the Oil Pollution Act of 1990 adopted following the *Exxon Valdez* oil spill in 1989.¹⁴² In paragraph 35 of Decision 7, the Commission's Governing Council decided that payments would be available for direct environmental damage and the depletion of natural resources, including losses or expenses resulting from:

- (a) abatement and prevention of environmental damage, including expenses directly relating to fighting oil fires and stemming the flow of oil in coastal and international waters;
- (b) reasonable measures already taken to clean and restore the environment or future measures which can be documented as reasonably necessary to clean and restore the environment;
- (c) reasonable monitoring and assessment of the environmental damage for the purposes of evaluating and abating the harm and restoring the environment;
- (d) reasonable monitoring of public health and performing medical screenings for the purposes of investigation and combating increased health risks as a result of the environmental damage; and
- (e) depletion of or damage to natural resources.¹⁴³

In addressing these claims, the Commission was directed to apply Security Council Resolution 687 (1991) and the above criteria and, where necessary, 'other relevant rules of international law'.¹⁴⁴

Whereas paragraph 35(b) of the Governing Council criteria recognised a liability in respect of 'reasonable measures . . . to clean and restore the environment', paragraph 35(e) recognised an apparently additional liability in respect of loss relating to 'depletion of or damage to natural resources'. No guidance was provided by the Governing Council as to the meaning of the distinction drawn between claims in respect of 'environmental damage' and those in respect of

¹³⁹ *Ibid.*, 1220. The EPA standard was described in 'Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination', providing that 'Cleanup should generally achieve a level of risk with the 10⁻⁴ to 10⁻⁶ carcinogenic range based on the reasonable maximum exposure for an individual . . . If a dose assessment is conducted at the site . . . then 15 millrem per year (mrem/yr) effective dose equivalent (EDE) should generally be the maximum dose limit for humans' (*ibid.*, 1220-1).

¹⁴⁰ M. Kazazi, 'Environmental Damage in the Practice of the UN Compensation Commission', in Bowman and Boyle, *Environmental Damage*, 111.

¹⁴¹ P. H. Sand, 'Compensation for Environmental Damage from the 1991 Gulf War', 35(6) *Environmental Policy and Law* 244, 248 (2005).

¹⁴² UN Security Council Doc. S/AC.26/1991/WP.20, 20 November 1991.

¹⁴³ Governing Council, UN Compensation Commission, Decision 7, para. 35, UN Doc. S/23765, Annex (1992), 31 ILM 1051 (1992).

¹⁴⁴ UN Compensation Commission Provisional Rules for Claims Procedures, Art. 31, S/AC.26/1992/10, 26 June 1992.

'depletion of natural resources'. In 1995, a UNEP Working Group suggested that the distinction may relate to the idea that a 'natural resource' has, primarily, a commercial value, whereas 'environmental damage' relates to injury caused to components of the environment to which typically no commercial value attaches.¹⁴⁵ The UNEP Working Group suggested that environmental damage could relate to 'impairment of the environment', which may be defined as:

A change which has a measurable adverse impact on the quality of a particular environment of any of its components including its use and non-use values and its ability to support and sustain an acceptable quality of life and a viable ecological balance.¹⁴⁶

On the definition of 'depletion of natural resources', the UNEP Working Group suggested that it could be desirable

to treat depletion of natural resources as referring to the destruction of natural resource assets which occur in their natural state . . . and which have a primarily commercial use or commercial value rather than a non-commercial use or value.¹⁴⁷

The Panel of Commissioners addressing environmental claims ultimately took a different approach to that proposed by the UNEP Working Group, although one that still encompassed the possibility of compensation for pure environmental damage. In its report on the fifth instalment of claims, the Panel saw no bar to claims regarding losses due to the depletion of, or damage to, natural resources lacking a commercial value.¹⁴⁸ Other Panel reports determined that 'environmental damage' was not limited to losses or expenses resulting from the activities and events identified in paragraph 35 of Decision 7, but could also cover other direct losses or expenses, such as measures undertaken to prevent or abate harmful impacts of airborne contaminants, provided that they were a direct result of the invasion.¹⁴⁹

Claims relating to the environment were referred to as category 'F4' claims, and could only be made by states and international organisations. A first group comprised claims for environmental damage and the depletion of natural resources in the Persian Gulf region, including those resulting from oil-well fires and the discharge of oil into the sea. A second group comprised claims for costs incurred by states outside the region in providing assistance to states that were directly affected by the environmental damage, including the alleviation of damage caused by oil-well fires and the prevention and clean-up of pollution. In total, the Commission received 168 F4 claims seeking a total of approximately \$84 billion USD in compensation. Of these claims, which were processed in five instalments, compensation of \$5,261,746,450 USD was awarded,

¹⁴⁵ See R. Mackenzie and R. Khalastchi, 'Liability and Compensation for Environmental Damage in the Context of the Work of the UNCC', 5 *Review of European Community and International Environmental Law* 281 (1996).

¹⁴⁶ UNEP, *Report of the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities*, para. 45.

¹⁴⁷ *Ibid.*, para. 50.

¹⁴⁸ UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the Fifth Instalment of 'F4' Claims*, S/AC.26/2005/10, 30 June 2005, para. 57.

¹⁴⁹ Report on First Instalment, S/AC.26/2002/26, 3 October 2002, para. 23.

the largest ever compensation award issued in international environmental law.¹⁵⁰ In relation to the first instalment, the claims related to investigations of whether environmental damage or depletion of natural resources had occurred, studies to quantify the loss, and assessment of methodologies to abate or mitigate the damage.¹⁵¹ Claims in the second instalment related to costs incurred for measures to abate and prevent environmental damage, to clean and restore the environment, to monitor and assess environmental damage, and to monitor public health risks alleged to have resulted from the invasion. Iran, Kuwait and Saudi Arabia claimed \$829 million USD compensation for measures to respond to environmental damage and health risks from mines and other remnants of war, oil lakes, oil spills and pollutants released from oil-well fires. From outside the region, Australia, Canada, Germany, the Netherlands, the UK and the US claimed compensation of \$43 million USD for expenses incurred in providing assistance to states in the Persian Gulf region to respond to environmental damage or the threat of damage to the environment or health. The Panel recommended compensation payments of \$711 million USD, out of \$872 million USD claimed.¹⁵² In the third and fourth instalments, claims were made for expenses resulting from measures already taken or to be undertaken in the future to clean and restore environmental damage.¹⁵³ The fifth instalment claims were for compensation for damage to or depletion of natural resources, including cultural heritage resources, measures to clean and restore damaged environments, and damage to public health.¹⁵⁴ These last three instalments of claims presented complex issues, requiring consideration, among other factors, of the 'reasonableness' of the claim, causality, and the methodology for assessing and valuing environmental damage.

The Panel's reports on each instalment of claims indicate the fundamental bases of its approach. As summarised by one of the F4 panel commissioners, the elements of the Commission's practice of potentially wider significance in the environmental field included:¹⁵⁵

- (1) *Precautionary monitoring to identify and assess long-term risks to the environment and public health.* The Panel found that monitoring and assessment activities were reasonable if there was a plausible risk of environmental harm, even if the monitoring eventually established that no damage had been caused.¹⁵⁶ It also confirmed that loss or damage occurring outside Kuwait and

¹⁵⁰ A summary of the UNCC awards can be found at www.uncc.ch/summary-awards-and-current-status-payments

¹⁵¹ In 2001, a total of \$243 million USD was awarded to five governments (Saudi Arabia, Kuwait, Iran, Jordan and Syria) in respect of these claims: S/AC.26/2001/16.

¹⁵² UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning the Second Instalment of 'F4' Claims, S/AC.26/2002/26, 2 October 2002 ('Report on Second Instalment'), para. 347. Iran (\$67,000 USD recommended out of \$64.3 million USD claimed); Kuwait (\$694 million/\$715 million USD); Saudi Arabia (\$8.2 million/\$49.7 million USD); Australia (\$7,000/\$20,000 USD); Canada (\$529,000/\$1.25 million USD); Germany (\$2 million/\$28.7 million USD); Netherlands (zero/\$1.9 million USD); United Kingdom (\$1.8 million/\$2.2 million USD); and United States (\$3.8 million/\$9.1 million USD).

¹⁵³ \$1.15 billion USD was paid to Saudi Arabia and Kuwait in respect of third instalment claims out of a claimed amount of \$10 billion USD: S/AC.26/2003/31. In respect of fourth instalment claims, two reports were issued by the UNCC. The first (S/AC.26/2004/16) awarded \$629 million USD (out of \$16 billion USD claimed) to Iran, Kuwait and Saudi Arabia for clean-up and restoration costs. The second (S/AC.26/2004/17) dealt with Kuwait's separate claim for these costs, awarding \$2.277 billion USD out of \$6.799 billion USD claimed.

¹⁵⁴ See S/AC.26/2005/10, awarding \$252 million USD (out of nearly \$50 billion USD claimed) to four countries (Iran, Saudi Arabia, Jordan and Kuwait).

¹⁵⁵ Sand, 'Compensation for Environmental Damage from the 1991 Gulf War', 248.

¹⁵⁶ UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning the First Instalment of 'F4' Claims, S/AC.26/2001/16, 22 June 2001 ('Report on First Instalment'), paras. 31 and 32.

- Iraq was compensable.¹⁵⁷ However, claims which were ‘theoretical or speculative’ or which had only a tenuous link with damage resulting from Iraq’s invasion were excluded.¹⁵⁸
- (2) *Reimbursement of mutual assistance costs in environmental emergencies.* The Panel found that the costs of such assistance provided by countries outside the region were compensable¹⁵⁹ if the predominant purpose was to respond to actual or threatened environmental damage, i.e. ‘environmental solidarity costs’.¹⁶⁰
 - (3) *The obligation for claimants to mitigate and contain damage to the environment.* The Panel stressed that this duty was ‘a necessary consequence of the common concern for the protection and conservation of the environment, and entails obligations towards the international community and future generations’.¹⁶¹ Consequently, in cases where claimant governments had failed to take the necessary measures to prevent aggravation of environmental damage, compensation was denied, or reduced to take account of the fact that some of the damage was due to factors not attributable to Iraq. In addition, the Panel – drawing on Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration – held that claimants ‘have the obligation under international law to ensure that the remediation measures that they take do not cause damage to the environment in other States or in areas beyond the limitations of national jurisdiction’.¹⁶²
 - (4) *Valuation methods to ensure the remediation of lost ecological services.* In valuing environmental damage, including pure environmental damage, the Panel employed novel valuation methods, such as ‘habitat equivalency analysis’.¹⁶³ The latter method was used for the purpose of determining the nature and extent of compensatory remediation in the event of the loss of ecological services.¹⁶⁴
 - (5) *Follow-up tracking to ensure the environmental effectiveness of remediation, making the disbursement of compensation awards conditional upon compliance with agreed environmental objectives (‘green conditionality’).* Requirements were instituted for the receipt and independent

¹⁵⁷ *Ibid.*, paras. 53–4.

¹⁵⁸ *Ibid.*, paras. 30–1. In assessing the link, the Panel had regard to the particular circumstances of each case and four considerations: (1) whether there was a possibility that damage or depletion could have been caused as a result of the invasion; (2) whether the areas or resources in respect of the activity claimed for could have been affected by pollutant released as a result of the invasion; (3) whether there was evidence of environmental damage or risk of such damage as a result of the invasion; and (4) whether there was a reasonable prospect that the activity could produce results that would assist the panel in reviewing claims (paras. 31–2).

¹⁵⁹ However, this was not to duplicate compensation paid to any country in the region (*ibid.*, paras. 34–5).

¹⁶⁰ Expenses resulting from activities undertaken by military personnel were found to be compensable if there was evidence to show that the predominant purpose of the activity engaged in was to respond to environmental damage or threats of damage to the environment or health (Report on Second Instalment, para. 29).

¹⁶¹ Panel Reports F4/3(2003), paras. 42–3; F4/4/II(2004), para. 38; and F4/5(2005), paras. 40–1.

¹⁶² Panel Report F4/3(2003), para. 50. The obligation to consider transboundary effects of remediation or other measures was reiterated in the fourth and fifth reports: UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning Part One of the Fourth Instalment of ‘F4’ Claims, S/AC.26/2004/16, 9 December 2004 (‘Report on Part One of Fourth Instalment’), Technical Annexes, Introduction, para. 4(g); UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning Part Two of the Fourth Instalment of ‘F4’ Claims, S/AC.26/2004/17, 9 December 2004 (‘Report on Part Two of Fourth Instalment’), Technical Annexes, Introduction, para. 4(g); UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning the Fifth Instalment of ‘F4’ Claims, S/AC.26/2005/10, 30 June 2005 (‘Report on Fifth Instalment’), Technical Annexes, Introduction, para. 4(f).

¹⁶³ By contrast, the Panel rejected other methods such as travel costs surveys as inadequate for quantifying Kuwait and Saudi Arabia’s loss of recreational shoreline uses.

¹⁶⁴ F4/5(2005), paras. 353–66 (rangeland wildlife habitats in Jordan); F4/5(2005), paras. 442–56 (natural shoreline habitats in Kuwait and Saudi Arabia).

review of progress reports from governments receiving funds for monitoring and assessment activities, and environmental remediation activities, to ensure the funds were spent on such activities in a transparent and appropriate manner.¹⁶⁵ In December 2005, the Governing Council adopted a detailed set of Guidelines for the Follow-up Programme for Environmental Awards.¹⁶⁶ In 2011, the Governing Council adopted a further decision on the fulfilment of the Follow-up Programme for Environmental Awards calling upon participating governments to establish certain systems and controls for the management, accounting and auditing of funds and to provide reports on such for independent review.¹⁶⁷

A particular difficulty faced by the Panel across all the various claims instalments was that of ascertaining whether and to what extent damage that was identified was attributable to Iraq's invasion, and the inadequacy of documented baseline information on the state of the environment or of conditions and trends regarding natural resources prior to the invasion.¹⁶⁸ While many environmental claims were rejected on an evidentiary basis, the Commission allowed a number of substantial claims seeking restoration of the environment to its pre-invasion state. In respect of such claims, the Commission affirmed that the 'primary emphasis must be placed on restoring the environment to pre-invasion conditions, in terms of its overall ecological functioning rather than on the removal of specific contaminants or restoration of the environment to a particular physical condition'. In addition, it indicated that proposed measures for the complete removal of contaminants 'likely to result in more negative than positive effects' would not qualify as 'reasonable' clean-up and restorative measures.¹⁶⁹

In terms of process, the Commission also adopted several novel approaches, compared with more conventional bilateral environmental dispute settlement proceedings. In reviewing the second instalment of claims, the Panel was assisted by a multidisciplinary team of independent experts retained by the Commission, having regard to the complexity of the issues and the need to consider scientific, legal, social, commercial and accounting issues.¹⁷⁰ As indicated above with respect to valuation methodology, the Panel embraced methods of assessment relying upon the abstract quantification of damage, such as habitat equivalency analysis. This was important in respect of claims for compensatory remediation resulting from the irreversible loss of ecological services as a result of the Gulf War.¹⁷¹ In this regard, the conclusions reached by the Panel differed from those of the International Oil Pollution Convention Fund, which decided in 1980 that the assessment of compensation would not be made on the basis of 'an abstract quantification of damage calculated in accordance with theoretical models', an approach which

¹⁶⁵ Governing Council Decisions 132 (S/AC.26/Dec.132 (2001)), 212 (S/AC.26/Dec.212 (2003)), 234 (S/AC.26/Dec.234 (2004)), 235 (S/AC.26/Dec.235 (2004)) and 248 (S/AC.26/Dec.248 (2005)).

¹⁶⁶ S/AC.26/Dec.258 (8 December 2005).

¹⁶⁷ S/AC.26/Dec.269 (7 April 2011). By two decisions adopted in 2013, the Governing Council determined that the participating governments had established the requisite systems and controls and declared the mandate of the programme complete (see S/AC.26/Dec. 270 (2013) and S/AC/26/Dec. 271 (2013)).

¹⁶⁸ Report on First Instalment, S/AC.26/2001/16, 22 June 2001, paras. 33–4. The Panel applied 'generally accepted scientific criteria and methodologies' (para. 35).

¹⁶⁹ Report on Part One of Fourth Instalment, para. 50; Report on Part Two of Fourth Instalment, para. 41.

¹⁷⁰ Report on the Second Instalment, paras. 42–3. Experts were retained in the fields of oil spill response, ordnance removal and disposal, accounting, civil engineering, electric power systems operations, fisheries, marine biology and oceanography.

¹⁷¹ Three such compensatory projects were elaborated in the Panel's final report (Report on Fifth Instalment, Technical Annexes I–III).

does not allow claims for loss of environmental amenity.¹⁷² The approach of the International Oil Pollution Convention Fund has been reflected in certain other civil liability treaties: the 1993 Lugano Convention allows compensation for impairment of the environment, other than loss of profit from such impairment, limited to ‘the costs of measures of reinstatement actually undertaken or to be undertaken’.¹⁷³ By contrast, the 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol suggests an approach more in line with that of the UN Compensation Commission: ‘response measures’ under the Protocol encompass reasonable actions to restore biological diversity, in the first instance, to ‘the condition that existed before the damage occurred, or its nearest equivalent’, or, where that is determined not to be possible, by ‘replacing the loss of biological diversity with other components of biological diversity for the same, or for another type of use either at the same or, as appropriate, at an alternative location’.¹⁷⁴

International Crimes

International responsibility may also trigger liability of a criminal nature.¹⁷⁵ At one time, the International Law Commission (ILC) shared this view, proposing in earlier versions of its draft Articles on State Responsibility that certain environmental damage may be so serious in the eyes of the international community that it should be categorised as criminal, or delictual. In Article 19 of its 1980 draft Articles on State Responsibility, the ILC proposed classifying as an international crime or delict ‘a serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas’.¹⁷⁶ However, the draft Articles on State Responsibility adopted in 2001 eliminated Article 19, having regard to the fact that the responsibility with which it was concerned was that of a state, and not of individuals. The provisions that were adopted – Articles 40 and 41 on serious breaches – identify the legal consequences for violations of peremptory norms of general international law, but do not state exhaustively what those norms are.¹⁷⁷ Massive pollution and other environmental catastrophes are not referred to as examples of serious breaches in the Articles or in the commentary on the Articles, although the commentary does not purport to be exhaustive.¹⁷⁸ It is plain also that Articles 40 and 41 were intended to be open-ended, so as not to preclude the development of rules detailing the consequences of serious breaches.¹⁷⁹

Other ILC work has maintained a reference to environmental crimes, although in the context of individual (as opposed to stata) criminality. The ILC’s Draft Code of Crimes Against the Peace and Security of Mankind, adopted on second reading in 1996, identifies widespread environmental damage as a crime against the peace and security of mankind.¹⁸⁰ By draft Article 20(g) (formerly Article 22), an individual who employs methods or means of warfare ‘which are

¹⁷² See n. 387 and accompanying text. ¹⁷³ Art. 2(8)(c), pp. 799–800; see also 1989 CRTD Convention, p. 792.

¹⁷⁴ Art. 2(2)(d).

¹⁷⁵ G. Gilbert, ‘The Criminal Responsibility of States’, 39 *International and Comparative Law Quarterly* 345 (1990); A. Vercher, ‘The Use of Criminal Law for the Protection of the Environment in Europe: Council of Europe Resolution 77 (28)’, 10 *Northwestern Journal of International Law and Business* 442 (1990); R. Prévost, ‘International Criminal Environmental Law’, in G. Goodwin-Gill and S. Talmon (eds.), *The Reality of International Law: Essays in Honour of Ian Brownlie* (Oxford: Clarendon Press, 1999).

¹⁷⁶ Part I, *Yearbook of the International Law Commission* (1980-II), Part 2, 30, Art. 19.

¹⁷⁷ *Yearbook of the International Law Commission* (2001), 292. ¹⁷⁸ See *ibid.*, 277–92. ¹⁷⁹ *Ibid.*, 292.

¹⁸⁰ Report of the ILC, 48th Session, UN Doc. A/51/10 (1996), Art. 20; the first draft (1991) is available at 30 ILM 1584 (1991).

intended or may be expected to cause widespread, long-term and severe damage to the natural environment' would be liable to be guilty of an exceptionally serious war crime. The standard applicable to the level of environmental damage is taken from the 1977 ENMOD Convention and Protocol I Additional to the 1949 Geneva Conventions.¹⁸¹ The draft Articles as adopted excluded draft Article 26 (from the first draft), which was stated to apply in times of peace as well as during armed conflict, and which provided that an individual who 'wilfully causes or orders the causing of widespread, long-term and severe damage to the natural environment' would also be guilty of a crime.

The ILC's work informed the drafting of the Statute of the International Criminal Court (ICC Statute), which defines as a war crime an intentional attack with the knowledge that it will cause 'widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated'.¹⁸² It remains to be seen whether the ICC Statute will be interpreted to include environmental crimes in relation to acts of genocide or crimes against humanity, as has been suggested.¹⁸³ In March 2005, the Security Council referred the situation in Darfur, Sudan, to the Prosecutor of the ICC,¹⁸⁴ who decided to open an investigation in June 2005. Currently, five cases are being heard before the ICC's Pre-Trial Chamber I against members of the Sudanese government and Janjaweed militia, which may provide an opportunity to consider the notion of environmental crimes given allegations of destruction of crops and deliberate contamination of water supplies.¹⁸⁵ In September 2016, the ICC Prosecutor released a comprehensive policy paper on case selection and prioritisation which suggests that increased attention will be given in the future to the prosecution of crimes 'that are committed by means of, or that result in, *inter alia*, the destruction of the environment, the illegal exploitation of natural resources or the illegal dispossession of land'.¹⁸⁶

It should also be noted that in 1998 the Council of Europe adopted a Convention on the Protection of the Environment Through Criminal Law. When – if ever – it enters into force it will require parties to criminalise under their domestic law intentional (Article 2) or grossly negligent (Article 3) acts falling within certain categories which cause substantial environmental damage.¹⁸⁷ The Convention identifies certain categories of environmentally damaging acts as being especially serious,¹⁸⁸ and other acts in respect of which sanctions or other measures may

¹⁸¹ See Chapter 17, pp. 834–5. ¹⁸² Rome, 17 July 1998, in force 2 July 2002, 37 ILM 999 (1998), Art. 8(2)(b)(iv).

¹⁸³ See generally P. Sharp, 'Prospects for Environmental Liability in the International Criminal Court', 18 *Virginia Environmental Law Journal* 217 (1999).

¹⁸⁴ Security Council Res. 1593 (2005).

¹⁸⁵ J. Wyatt, 'Law-making at the Intersection of International Environmental, Humanitarian and Criminal Law: The Issue of Damage to the Environment in International Armed Conflict', 92(879) *International Review of the Red Cross* 593 (2010).

¹⁸⁶ Office of the Prosecutor, *Policy Paper on Case Selection and Prioritisation*, 15 September 2016, para. 41, available at www.icc-cpi.int/itemsDocuments/20160915_OTP-Policy_Case-Selection_Eng.pdf

¹⁸⁷ Strasbourg, 4 November 1998, not in force, ETS No. 172. Under Art. 6, on jurisdiction, states are to criminalise activities committed on their territory, on ships or aircrafts registered in their territory or flying their flags, or by their nationals if the offence is criminal where it is committed.

¹⁸⁸ Art. 2(1)(a)–(e). The intentional unlawful acts include: the discharge, emission or introduction of a quantity of substances or ionising radiation into air, soil or water which causes death or serious injury to any person, or creates a significant risk of causing death or serious injury to any person (Art. 2(1)(a)); unlawful discharge, emission or introduction of a quantity of substances or ionising radiation into air, soil or water which causes or is likely to cause their lasting deterioration or death or serious injury to any person or substantial damage to protected monuments, other protected objects, property, animals or plants (Art. 2(1)(b)); unlawful disposal, treatment, storage, transport, export or import of hazardous waste (Art. 2(1)(c)); unlawful operation of a plant in which a dangerous activity is carried out (Art. 2(1)(d)); and manufacture, treatment, storage, use, transport, export or import of nuclear materials or

be appropriate.¹⁸⁹ The Convention identifies as sanctions imprisonment, fines and reinstatement of the environment, and allows parties to establish criminal liability for corporations.¹⁹⁰

Treaties

The liability of states for environmental damage in relation to particular activities or regions is addressed by a small number of treaties. These establish rules of state liability, or provide a basis for the development of such rules on state liability,¹⁹¹ or deny that the treaty contains any such rule on liability.

1972 Space Liability Convention¹⁹²

The Convention on International Liability for Damage Caused by Space Objects (1972 Space Liability Convention)¹⁹³ is one of the few treaties to establish a clear rule of state liability.¹⁹⁴ Subject to the exceptions set out in Articles VI and VII, a state that launches a space object is 'absolutely liable to pay compensation for damage caused by its space object on the surface of the earth or to aircraft in flight'.¹⁹⁵ 'Damage' is defined as 'loss of life, personal injury or other impairment of health; or loss of or damage to property of states or of persons, natural or judicial, or property of international intergovernmental organisations'.¹⁹⁶ Although the definition does not refer to 'environmental' harm, it can be interpreted to allow compensation claims for the 'property of states' that are environmental assets or other natural resources:

Compensation is to be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or judicial, state or international organisation on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred.¹⁹⁷

A party will be liable for damage other than on the surface of the Earth to another space object or persons or property on board only if the damage is due to fault.¹⁹⁸ In some situations, states

other hazardous radioactive substances (Art. 2(1)(e)). Art. 1(a) defines 'unlawful' as 'infringing a law, an administrative regulation or a decision taken by a competent authority, aiming at the protection of the environment'.

¹⁸⁹ Art. 4 (the acts include: unlawful introduction of substances or ionising radiation; causing of noise; disposal, treatment, storage, transport, export or import of waste; operation of a plant; manufacture, treatment, use, transport, export or import of nuclear materials, other radioactive substances or hazardous chemicals; causing of changes detrimental to natural components of a national park, nature reserve, water conservation area or other protected areas; and possession, taking, damaging, killing or trading of or in protected wild flora and fauna species).

¹⁹⁰ Arts. 6 and 9. ¹⁹¹ See n. 8.

¹⁹² R. E. Alexander, 'Measuring Damages under the Convention on International Liability for Damage Caused by Space Objects', 6 *Journal of Space Law* 151 (1978); C. Q. Christol, 'International Liability for Damage Caused by Space Objects', 74 *American Journal of International Law* 346 (1980); B. Schwartz and N. L. Berlin, 'After the Fall: An Analysis of Canadian Legal Claims for Damage Caused by Cosmos 954', 27 *McGill Law Journal* 676 (1982); S. Freeland, 'There's a Satellite in My Backyard! - Mir and the Convention on International Liability for Damage Caused by Space Objects', 24(2) *University of New South Wales Law Journal* 462 (2001).

¹⁹³ See also 1967 Outer Space Treaty, Art. VII; 1979 Moon Treaty, Art. XIV.

¹⁹⁴ 29 March 1972, in force 1 September 1972, 961 UNTS 187. The Convention also establishes procedures and timetables for the presentation of compensation claims.

¹⁹⁵ Art. II. ¹⁹⁶ Art. I(a). ¹⁹⁷ Art. XII. ¹⁹⁸ Art. III.

may be jointly and severally liable, notably where damage is caused on the surface of a third state as a result of damage by one space object to another.¹⁹⁹

The only claim under the 1972 Convention was presented by Canada in 1979 to the former Soviet Union for damage caused by the crash of Cosmos 954, a nuclear-powered satellite that disintegrated over Canada.²⁰⁰ Canadian authorities took steps to locate, recover, remove and test the radioactive debris and to clean up the affected areas of the Northwest Territories and the Provinces of Alberta and Saskatchewan, claiming some C\$6 million from the Soviet Union. The Canadian claim was based on relevant international agreements (the 1972 Convention and Article VII of the 1967 Outer Space Treaty) and general principles of international law. Canada claimed that the deposit and presence of hazardous radioactive debris over large areas of Canadian territory rendering part of it unfit for use constituted damage to property within the meaning of the 1972 Convention.²⁰¹ Canada also claimed the Soviet Union had failed to minimise the effects by providing timely and complete answers to its questions, and under general principles of international law the Soviet Union was bound to prevent and reduce harmful consequences and to mitigate damage.²⁰² The claim covered the costs of restoring Canadian territory, to the extent possible, to the condition that would have existed if the intrusion had not occurred. In calculating the costs, Canada applied 'the relevant criteria established by general principles of international law and has limited the costs included in the claim to those costs that are reasonable, proximately caused by the intrusion of the satellite and deposit of debris and capable of being calculated with a reasonable degree of certainty'.²⁰³

Canada also claimed under Article VII of the 1967 Outer Space Treaty that the Soviet Union must compensate in accordance with international law for the consequences of the intrusion of the satellite into Canadian airspace and the deposit on Canadian territory of hazardous radioactive debris.²⁰⁴ Finally, Canada claimed under general principles of international law that the violation of its sovereignty was established by 'the mere fact of the trespass of the satellite, the harmful consequences of this intrusion, being the damage caused by the presence of hazardous radioactive debris and the interference with the sovereign right of Canada to determine the acts that will be performed on its territory'.²⁰⁵ This violation gave rise to an obligation to pay compensation and was based on a standard of absolute liability for space activities, which applied to activities in common having a high degree of risk and had been accepted as a general principle of international law.²⁰⁶ The measure of compensation under this head was the same as that applied under the 1972 Convention. Canada additionally reserved its rights to present additional claims for compensation for damage not yet identified, for the costs incurred in establishing a Compensation Commission under the 1972 Convention, and for interest.²⁰⁷

The matter was settled in 1981 when the Soviet Union agreed to pay C\$3 million in full and final compensation, and Canada agreed to accept such payment in full and final settlement of its claim.²⁰⁸ Although the settlement agreement was silent as to the basis of the settlement, the reference in Article II of the agreement to Canada's claim allows a conclusion that the settlement was agreed on the basis of all the legal arguments proposed by Canada.²⁰⁹

¹⁹⁹ Arts. IV and V.

²⁰⁰ Canada, Claim Against the USSR for Damage Caused by Soviet Cosmos 954, 23 January 1979, 18 ILM 899-908 (1979).

²⁰¹ *Ibid.*, 905. ²⁰² *Ibid.*, 805-6. ²⁰³ *Ibid.*, 906. ²⁰⁴ *Ibid.*, 907. ²⁰⁵ *Ibid.*, 908. ²⁰⁶ *Ibid.*

²⁰⁷ *Ibid.*, 909. ²⁰⁸ Protocol Between Canada and the Soviet Union, 2 April 1981, 20 ILM 689 (1981), Arts. I and II.

²⁰⁹ Although in an earlier communication, pre-dating the Canadian claim, the Soviet Union 'reaffirmed' that it was guided by 'the international agreements regulating the activities of states in the outer space', and that any

1979 LRTAP Convention

The 1979 LRTAP Convention is of interest mainly because of a footnote entered in relation to Article 8, which commits parties to exchange available information on, inter alia, the extent of the damage which physico-chemical and biological data indicate can be attributed to long-range transboundary air pollution. The footnote provides that the Convention 'does not contain a rule on state liability as to damage', and reflects states' concern over inadvertently entering into an international agreement which may subsequently be used to establish their liability for damage. The footnote is neutral in its effect and does not prevent the application of general rules of international law concerning state liability for damage resulting from the breach of the terms of the 1979 LRTAP Convention itself.

1982 UNCLOS

UNCLOS contains two rules on state liability for damage.²¹⁰ The first provision is Article 235, according to which states are themselves

responsible for the fulfilment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law.²¹¹

Article 235 incorporates existing rules of state liability into the Convention and does not create a new rule of liability for damage to the marine environment. UNCLOS does not define 'damage' to the marine environment nor establish a measure of compensation. The definition of marine 'pollution' in Article 1(4) provides some guidance as to the standard of damage which might be applied: 'deleterious effects' envisaged include harm to living resources and marine life, hazards to human health, hindrance to marine activities, impairment of water quality and reduction of amenities.

The second provision is Article 139, which applies to the 'Area' (i.e. the seabed and ocean floor and subsoil beyond the limits of national jurisdiction). Pursuant to this provision, states parties and international organisations have the responsibility to ensure that activities in the Area carried out by them, or by their nationals or by those effectively controlled by them or their nationals, comply with the UNCLOS rules on the Area.²¹² Article 139(2) provides:

compensation claim presented by Canada would be considered by the Soviet Union in strict accordance with the provisions of the 1972 Convention: Soviet Union, Note of 21 March 1978, 18 ILM 902 at 923 (1979).

²¹⁰ B. Kwiatkowska-Czechowska, 'States' Responsibility for Pollution Damage Resulting from the Exploration for and Exploitation of Sea-Bed Mineral Resources', 10 *Polish Yearbook of International Law* 157 (1980); B. D. Smith, *State Responsibility and the Marine Environment* (Oxford: Clarendon Press, 1988); G. Kasoulides, 'State Responsibility and Assessment of Liability for Damage Resulting from Dumping Operations', 26 *San Diego Law Review* 497 (1989); L. de la Fayette, 'New Approaches for Addressing Damage to the Marine Environment', 20 *International Journal of Marine and Coastal Law* 167 (2005); P. Wetterstein, 'Complete Freedom of the Seas or the Polluter Pays for Everything - How Far Should We Go in Order to Protect the Environment?', 17 *Environmental Liability* 86 (2009). See also D. Freestone, 'Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area', 105 *American Journal of International Law* 755 (2011); D. Anton, R. Makgill and C. Payne, 'Seabed Mining - Advisory Opinion on Responsibility and Liability', 41 *Environmental Policy and Law* 60 (2011); D. French, 'From the Depth: Rich Pickings of Principles of Sustainable Development and General International Law on the Ocean Floor - the Seabed Disputes Chamber's 2011 Advisory Opinion', 26 *International Journal of Marine and Coastal Law* 525 (2011).

²¹¹ Art. 235(1). ²¹² Art. 139(1).

Without prejudice to the rules of international law and Annex III, article 22, damage caused by the failure of a State Party or international organization to carry out its responsibilities under this Part shall entail liability; States Parties or international organizations acting together shall bear joint and several liability. A State Party shall not however be liable for damage caused by any failure to comply with this Part by a person whom it has sponsored under article 153, paragraph 2(b), if the State Party has taken all necessary and appropriate measures to secure effective compliance under article 153, paragraph 4, and Annex III, article 4, paragraph 4.²¹³

Annex III, Article 4(4), provides:

A sponsoring State shall not, however, be liable for damage caused by any failure of a contractor sponsored by it to comply with its obligations if that State Party has adopted laws and regulations and taken administrative measures which are, within the framework of its legal system, reasonably appropriate for securing compliance by persons under its jurisdiction.

States parties are also required to take appropriate measures to ensure that international organisations of which they are members implement their responsibilities under Article 139.²¹⁴

These provisions were extensively considered by the Seabed Disputes Chamber of ITLOS in its 2011 Advisory Opinion on *Responsibilities and Obligations in the Area*.²¹⁵ The International Seabed Authority asked the Tribunal to render an advisory opinion on three questions, two of which related to matters of liability and associated state obligations under the Convention:

1. What is the extent of liability of a State Party for any failure to comply with the provisions of the Convention, in particular Part XI, and the 1994 Agreement, by an entity whom it has sponsored under Article 153, paragraph 2(b), of the Convention?
2. What are the necessary and appropriate measures that a sponsoring State must take in order to fulfil its responsibility under the Convention, in particular Article 139 and Annex III, and the 1994 Agreement?

At the outset of its consideration of the issue of liability, the Tribunal noted that Article 139(2) of the Convention and related provisions prescribe or refer to different sources of liability, namely:

- (1) rules concerning the liability of states parties (Article 139(2), first sentence);
- (2) rules concerning sponsoring state liability (Article 139(2), second sentence);
- (3) rules concerning the liability of contractors and the International Seabed Authority (Annex III, Article 22); and

²¹³ Art. 139(2). Art. 22 of Annex III provides, inter alia, that contractors shall have responsibility or liability for any damage arising out of wrongful acts in the conduct of operations in the 'Area', and that the Authority shall have responsibility or liability for damage arising out of wrongful acts in the exercise of its powers and functions; in every case liability shall be 'for the actual amount of damage' (Annex III, Art. 22).

²¹⁴ Art. 139(2) and (3).

²¹⁵ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011).

- (4) consequent upon the 'without prejudice' clause in Article 139(2), rules of international law concerning state liability that supplement the rules concerning the liability of the sponsoring state set out in UNCLOS.²¹⁶

In respect of the first category of liability, the Tribunal confirmed that a sponsoring state only incurs liability under Article 139(2), first sentence, as a result of a failure to carry out its own responsibilities, and is not liable for the failure of the sponsored contractor to meet its obligations.²¹⁷ Accordingly, the Tribunal observed that two conditions must be fulfilled in order for liability to arise: first, the failure of the sponsoring state to carry out its responsibilities through an act or omission contrary to such responsibilities and, second, the occurrence of damage.²¹⁸ No liability arises in cases where there is no damage or in cases where damage occurs but the sponsoring state has met its relevant obligations under the Convention. Moreover, the Tribunal held that there must be a causal link between the damage and the failure of the state to meet its responsibilities, and that such a causal link cannot be presumed and must be proven.²¹⁹

As to the entities entitled to invoke such liability, the Tribunal indicated that the Authority may have the capacity to do so 'on behalf' of mankind.²²⁰ Relying on Article 48 of the ILC Articles on State Responsibility, which refers to the possibility of states other than an injured state invoking the responsibility of another state,²²¹ the Tribunal also suggested each state party may be entitled to claim compensation 'in light of the *erga omnes* character of the obligations relating to preservation of the environment of the high seas and in the Area'.²²² This is the first indication of the existence of a right of *actio popularis* arising under an international environmental treaty outside the context of non-compliance procedures.

Turning to the exemption to sponsoring state liability provided in Article 139(2), second sentence, and Annex III, Article 4(4),²²³ the Tribunal observed that the precondition for this exemption is that the sponsoring state has taken 'all necessary and appropriate measures to secure effective compliance' by the sponsored contractor.²²⁴ States, however, do not have unlimited discretion with respect to the measures taken to avoid liability. The Tribunal indicated several requirements in this regard, including the need for administrative measures aimed at securing compliance, having in place measures at all times that a contract with the Authority is in force, ensuring that measures cover the obligations of the contractor after the completion of the exploration phase, and undertaking regular review of measures to ensure that they meet current standards and that the contractor meets its obligations effectively without detriment to the common heritage of mankind.²²⁵ The Tribunal also emphasised the need for regulatory

²¹⁶ *Ibid.*, para. 171. ²¹⁷ *Ibid.*, para. 172. ²¹⁸ *Ibid.*, paras. 176 and 177.

²¹⁹ *Ibid.*, paras. 181–2 and 184. In other words, the conventional rules regarding the attribution of the conduct of private entities to the state apply.

²²⁰ *Ibid.*, para. 180, relying on Art. 137(2). ²²¹ Chapter 5, p. 157.

²²² *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, para. 180.

²²³ This exemption does not apply to liability arising out of violations of parties' 'direct obligations' under the Convention, identified by the Tribunal as the obligation to assist the Authority in the exercise of control over activities in the Area; the obligation to apply a precautionary approach; the obligation to apply best environmental practices; the obligation to take measures to ensure the provision of guarantees in the event of an emergency order by the Authority for protection of the marine environment; the obligation to ensure the availability of recourse for compensation in respect of damage caused by pollution; and the obligation to conduct environmental impact assessments (*ibid.*, paras. 122 and 207).

²²⁴ *Ibid.*, para. 186. ²²⁵ *Ibid.*, paras. 218–22.

measures governing such matters rather than a purely contractual approach.²²⁶ As to the content of the measures, the Tribunal did not feel it appropriate to render specific advice on this issue, which might encroach on the policy choices of states. Instead, it suggested some general considerations for states in making their choice of measures under the relevant provisions of the Convention.²²⁷

The Tribunal also indicated a number of other principles applicable to sponsoring state liability where it arises. It rejected the application of a strict liability standard in such cases²²⁸ and indicated that, in circumstances of multiple sponsorship of an activity, the states concerned would bear liability jointly and severally.²²⁹ The extent of sponsoring state liability, the Tribunal found, would be 'for the actual amount of the damage' and would extend beyond the completion of the exploration phase – the same standards that are applicable to contractors.²³⁰ It also indicated that different forms of reparation may be available, expressing the view that the eventual form reparation takes 'will depend on both the actual damage and the technical feasibility of restoring the situation to the *status quo ante*'.²³¹ Finally the Tribunal pointed out that 'the regime of international law on responsibility and liability is not considered to be static', allowing for evolution of the deep seabed mining liability regime in light of new developments in international law.²³²

In the view of the Tribunal, sponsoring state liability under Article 139(2) exists in parallel to that of the sponsored contractor. Accordingly, where the contractor pays the actual amount of the damage caused there is no room for reparation by the sponsoring state.²³³ Moreover, the liabilities of the contractor and sponsoring state are not joint and several.²³⁴ The Tribunal also came to the conclusion that there is 'no room for residual liability' of the sponsoring state under Article 139 of the Convention.²³⁵ Thus, in cases where the sponsored contractor is unable to discharge a liability in full, the gap cannot be recovered from the sponsored state,²³⁶ nor is there any recourse to the liability of the sponsoring state under customary international law if the state has not failed to meet its obligations under the Convention.²³⁷

1988 CRAMRA and 1991 Antarctic Environmental Protocol²³⁸

In a manner similar to Article 139 of UNCLOS, the 1988 CRAMRA provides that a sponsoring state will be liable, in accordance with international law, if damage under Article 8(2) of the

²²⁶ *Ibid.*, para. 226. ²²⁷ *Ibid.*, paras. 228 and 230–41. ²²⁸ *Ibid.*, para. 189.

²²⁹ *Ibid.*, para. 192. This is subject to any regulations the International Seabed Authority might issue with respect to liability; as the Tribunal indicated these are more likely to be developed as projects proceed to the exploitation stage.

²³⁰ *Ibid.*, paras. 195 and 198. ²³¹ *Ibid.*, para. 197. ²³² *Ibid.*, para. 211. ²³³ *Ibid.*, paras. 181–2.

²³⁴ *Ibid.*, para. 201.

²³⁵ See also D. Anton, 'The Principle of Residual Liability in the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea', 7 *McGill International Journal of Sustainable Development Law and Policy* 241 (2012).

²³⁶ *Ibid.*, para. 204. The Tribunal recommended that the Authority may wish to consider establishment of a trust fund to compensate for damage in such circumstances.

²³⁷ *Ibid.*, para. 209.

²³⁸ H. C. Burmester, 'Liability for Damage from Antarctic Mineral Resource Activities', 29 *Virginia Journal of International Law* 621 (1989); M. Poole, 'Liability for Environmental Damage in Antarctica', 10 *Journal of Environmental and Natural Resources Law* 246 (1992); K. Scott, 'Liability for Environmental Damage in Antarctica: Annex VI to the Environmental Protocol on Liability Arising from Emergencies', 14 *Environmental Liability* 87 (2006); R. Wolfrum, 'Liability for Environmental Damage in Antarctica: Supplement to the Rules on State Responsibility or Lost Opportunity?', in I. Buffard, J. Crawford, A. Pellet and S. Wittich (eds.), *International Law Between Universalism and Fragmentation: Festschrift in Honour of Gerard Hafner* (Leiden: Martinus Nijhoff, 2008), 817.

Convention would not have occurred or continued if it had ‘carried out its obligations under [the] Convention’ with respect to the operator.²³⁹ Although liability is limited to that not satisfied by the operator or otherwise, this provision establishes potentially unlimited state liability for environmental damage. The significance of this provision should not be overstated, however, given that the treaty is not in force and has effectively been replaced by the 1991 Environment Protocol to the Antarctic Treaty, which is seen as establishing a far less stringent liability regime.²⁴⁰ Annex VI to the 1991 Protocol finalised in 2005 establishes a liability regime applicable to ‘environmental emergencies’ in the Antarctic Treaty area which relate to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities.²⁴¹ Liability is principally placed on operators (which in the context of research activities may often be state agencies), but Article 10 deals directly with state liability. It provides:

A Party shall not be liable for the failure of an operator, other than its State operators, to take response action to the extent that that Party took appropriate measures within its competence, including the adoption of laws and regulations, administrative actions and enforcement measures, to ensure compliance with this Annex.

This provision is substantially similar to Article 139 of UNCLOS and, like that provision, would not exclude state liability in the event of insufficient implementation by a state party of its obligations under the liability Annex. However, unlike CRAMRA, Article 10 does not provide for subsidiary state liability in the case where an operator is unwilling or unable to undertake the required response action in respect of an environmental emergency harming the Antarctic environment.

1992 Climate Change Convention and 2015 Paris Agreement

The 1992 Climate Change Convention does not contain a rule on the consequences of activities by states which harm the environment, although during the negotiations some states wanted to include a provision that the Convention did not prejudice the rules of international law concerning state responsibility and liability.²⁴² The Climate Change Convention defines ‘adverse effects of climate change’,²⁴³ and under Article 4(4) requires developed country parties listed in Annex II and the EU to ‘assist the developing countries parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects’.²⁴⁴

²³⁹ Art. 8(3)(a); see Chapter 13, pp. 637–9. Damage not covered under Art. 8(2) is subject to the applicable rules of international law (Art. 8(3)(b)).

²⁴⁰ Wolfrum, ‘Liability for Environmental Damage in Antarctica’, 818.

²⁴¹ Art. 1. The Annex will enter into force after its approval by the contracting parties that participated in its negotiation. See further pp. 639–44.

²⁴² See also the declarations adopted at the time of signature by Kiribati, Tuvalu and Nauru: Chapter 4, p. 111; and A. Jaitly and N. Khanna, ‘Liability for Climate Change: Who Pays, How Much and Why?’, 1 *Review of European Community and International Environmental Law* 453 (1992); P. A. Nollkaemper, ‘Internationale Aansprakelijkheid Voor Klimaatverandering’, 82 *Nederlands Juristenblad* 2873 (2007); M. Faure and M. Peeters (eds.), *Climate Change Liability* (Cheltenham, UK: Edward Elgar, 2011).

²⁴³ See n. 38. ²⁴⁴ See also 1997 Kyoto Protocol, Art. 2(3).

While this provision is not a formal expression of liability under the principles of state responsibility, it reflects an admission of responsibility with financial consequences.

The 2015 Paris Agreement included, for the first time in a climate change treaty, a provision relating to 'loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events'.²⁴⁵ While parties recognised the importance of 'averting, minimizing and addressing' such loss and damage, the Conference of the Parties decision adopting the Paris Agreement specifically provided that Article 8 'does not involve or provide a basis for any liability or compensation'.²⁴⁶

The Work of the International Law Commission²⁴⁷

Apart from its now completed work on state responsibility, the International Law Commission (ILC) began working in the late 1970s on the issue of the liability of states for acts not prohibited by international law, and in 1990 prepared a first set of draft Articles.²⁴⁸ The draft Articles were incomplete, and somewhat controversial. They were intended to supplement the rules on state responsibility and to establish principles governing state and civil liability in respect of transboundary harm that arises from activities that are not unlawful per se.²⁴⁹ In 1992, the ILC divided the topic of international liability into prevention and remedial measures, and decided to focus initially on developing draft Articles on prevention.²⁵⁰ In 2001, the Drafting Committee of the ILC adopted, upon second reading, final draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, completing its work on that part of the topic.²⁵¹ The draft Articles on

²⁴⁵ Art. 8. ²⁴⁶ UNFCCC, Dec. 21/1, Adoption of the Paris Agreement, FCCC/CP/2015/L.9/Rev.1, para. 52.

²⁴⁷ On the ILC's 1990 draft Articles, see R. Quentin Baxter, "'Schematic Outline" on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law', *Yearbook of the International Law Commission* (1982-II), Part 1, 51-64; J. Barboza, 'Preliminary Report on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law', UN Doc. A/CN.4/394 (1985); D. B. Magraw, 'Transboundary Harm: The International Law Commission's Study of International Liability', 80 *American Journal of International Law* 305 (1986); S. C. McCaffrey, 'The Work of the International Law Commission Relating to Transfrontier Environmental Harm', 20 *New York Journal of International Law and Politics* 608 (1988); A. Boyle, 'State Responsibility and International Liability for Injurious Consequences of Acts Not Prohibited by International Law: A Necessary Distinction?', 39 *International and Comparative Law Quarterly* 1 (1990); C. Tomuschat, 'International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law: The Work of the ILC', in F. Francioni and T. Scovazzi (eds.), *International Responsibility for Environmental Harm* (London: Graham & Trotman, 1991); J. Barboza, 'International Liability for the Injurious Consequences of Acts Not Prohibited by International Law and Protection of the Environment', 247 *Recueil des Cours* 295 (1994-III); J. Barboza, *The Environment, Risk and Liability in International Law* (Leiden: Brill/Nijhoff, 2011); J. Kulesza, *Due Diligence in International Law* (Leiden: Brill/Nijhoff, 2016).

²⁴⁸ J. Barboza, Sixth Report, UN Doc. A/CN.4/428, 39 (1990).

²⁴⁹ The draft Articles were intended to establish basic principles applicable to the activities carried out in the territory of a state, or in other places under its jurisdiction, or under its control, the physical consequences of which cause, or create a risk of causing, transboundary harm throughout the process: ILC Draft Articles, Art. 1. The activities envisaged include those which involve 'the handling, storage, production, carriage, unloading or other similar operation of one or more dangerous substances; or [which] use technologies that produce hazardous radiation; or [which] introduce into the environment genetically altered organisms and dangerous micro-organisms' (*ibid.*, Art. 2(a)); see also Art. 2 (b), (c) and (d) for definitions of 'dangerous substances', 'genetically altered organisms' and 'dangerous micro-organisms'. In relation to reparation, the draft Articles articulated a principle requiring a state of origin to make reparation for appreciable harm caused by activities following negotiation between states and guided by the criteria set out in the draft Articles. Such reparation was to restore the balance of interests affected by the harm.

²⁵⁰ P. Rao, First Report on Prevention of Transboundary Damage from Hazardous Activity, UN Doc. A/CN.4/487, 3-4 (1998).

²⁵¹ Chapter 6, p. 211. Prevention of Transboundary Harm from Hazardous Activities: Draft Preamble and Draft Articles adopted by the Drafting Committee on second reading, 3 May 2001, UN Doc. 1/CN/4/L.601.

Harm Prevention do not address liability and reparation, as earlier drafts had done, although some states expressed the view that liability and reparation were closely related to prevention and should be considered jointly.²⁵² The ILC decided, nevertheless, to develop the topics separately. In 2002, the ILC returned to its work on the related topic of liability,²⁵³ and, at its fifty-eighth session in 2006, adopted 'Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities'.²⁵⁴

The 2006 Draft Principles on the Allocation of Loss, consisting of eight principles, represent a far less ambitious outcome than that suggested by the ILC's earlier 1990 draft Articles.²⁵⁵ Nevertheless, the latter repay consideration, since they indicate an authoritative basis upon which to reflect upon some of the issues addressed in this chapter. In common with its earlier efforts, the ILC concentrated on hazardous activities not prohibited by international law that give rise to significant transboundary harm.²⁵⁶ The reasons for this focus, as articulated in the Preamble to the Draft Principles, are that incidents involving hazardous activities may occur despite compliance by the relevant state with its obligations of harm prevention and result in other states and/or their nationals suffering harm and serious loss.²⁵⁷ The purpose of the Draft Principles is thus to ensure 'prompt and adequate compensation to victims of transboundary damage' and to 'preserve and protect the environment' in such circumstances 'especially with respect to mitigation of damage to the environment and its restoration or reinstatement'.²⁵⁸

Following a review of international liability regimes, which were found to be primarily concerned with civil liability for operators of hazardous activities, the ILC decided to focus on adopting a scheme of allocation of loss, spreading the loss among multiple actors (primarily operators), though with the potential for some loss to be borne by the state of origin.²⁵⁹ Accordingly, Principle 4 instructs states to take all necessary measures to ensure that prompt and adequate compensation is available for victims of transboundary damage caused by hazardous activities located within their territory or otherwise under their jurisdiction or control. Such measures should include the imposition of liability on the operator (or other appropriate person or entity), which liability should not require proof of fault. Any conditions, limitations or exceptions to liability are to be consistent with the purpose of the Draft Principles as set out in Principle 3. Further requirements for state measures include an obligation on the operator (or other appropriate entity or person) to establish and maintain financial security to cover compensation claims and, in appropriate cases, a requirement for the establishment of national

²⁵² P. Rao, Third Report on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law (Prevention of Transboundary Damage from Hazardous Activities), UN Doc. A/CN.4/510 (2000).

²⁵³ ILC, Report of Its Fifty-Fourth Session, UN Doc. A/57/10, paras. 442ff. (2002).

²⁵⁴ UN Doc. A/61/10. 'Principles' were apparently preferred to Articles by the ILC on the basis that this 'would have the advantage of not requiring a harmonization of national laws and legal systems, which is fraught with difficulties', and because it was 'felt that the goal of widespread acceptance of the substantive provisions is more likely to be met if the outcome is cast as principles' (ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, Part 2, General Commentary, para. 12).

²⁵⁵ See Arts. 21–28, Chapter IV of the ILC's 1990 draft Articles, which addressed the issue of liability in the event of transboundary harm. Chapter V of the ILC's 1990 draft Articles envisaged civil claims being brought in the national courts of the state of origin as an alternative to interstate claims for the same harm, and to provide access to affected states, individuals or legal entities (Arts. 28(b) and 29(a)). See also J. Brunnée, 'Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection', 53(2) *International and Comparative Law Quarterly* 351, 355 (2004).

²⁵⁶ Principle 1. ²⁵⁷ Preamble. ²⁵⁸ Principle 3.

²⁵⁹ ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, Part 2, General Commentary, para. 9.

industry-wide funds. There remains some potential for the state of origin to bear responsibility for compensation of loss suffered in circumstances where the measures addressed to operator liability are insufficient to provide adequate compensation. This liability on the state is not capped or further circumscribed. Given that the regime was intended to be general and residual in character, the ILC took the view that it was not necessary to predetermine the share of loss to be allocated for the different actors or to precisely identify the role to be assigned to the state.²⁶⁰

The remaining Draft Principles cover some of the same ground as the earlier 1990 draft Articles, though in a more modest fashion.²⁶¹ Principle 5 on response measures sets out requirements of notification, consultation and cooperation with affected states in the event of an incident involving a hazardous activity that results or is likely to result in transboundary damage. Novel and potentially more far-reaching requirements are that the state of origin, with the appropriate involvement of the operator, is to ensure that appropriate response measures are taken, relying upon the best available scientific data and technology,²⁶² and that all states concerned should, where appropriate, seek the assistance of competent international organisations and other states on mutually acceptable terms and conditions.²⁶³ The states affected or likely to be affected by the transboundary damage are also under a duty to mitigate, and, if possible, eliminate the effects of such damage.²⁶⁴ Principle 6 deals with access to domestic remedies within the jurisdiction of the state of origin for victims of transboundary damage, without prejudice to their rights to seek other remedies. States may also provide for recourse to international claims settlement procedures that are expeditious and involve minimal expense. An innovative provision, drawing on developments in other areas of international environmental law,²⁶⁵ provides that states should guarantee appropriate access to information relevant for the pursuance of remedies, including claims for compensation.²⁶⁶ The Draft Principles also call for the non-discriminatory application of national law,²⁶⁷ and encourage the further development of international law on liability for particular categories or hazardous activities at the bilateral, regional or global level.²⁶⁸

CIVIL LIABILITY FOR ENVIRONMENTAL DAMAGE UNDER INTERNATIONAL LAW

A growing number of treaties establish rules on civil liability for environmental or related damage, although several are not yet in force, and some will probably never enter into force.

This suggests that the willingness of states to establish and apply principles of civil liability turns on the nature of the activity to be regulated, and the content of the rules agreed upon. In broad terms, there appears to be an inverse relationship between the scope of application of the rules – in terms of the activity targeted and the potential financial consequences proposed – and the prospects that they will enter into force. Generally, the civil liability regimes have been developed in relation to specific activities that are considered to be ultrahazardous, and rules have been in force for some time for damage caused by nuclear activities and as a result of oil spills. International rules have also been

²⁶⁰ *Ibid.*, General Commentary, para. 9.

²⁶¹ For discussion of the provisions of the 1990 draft Articles, see the third edition of this text, pp. 735–6.

²⁶² Principle 5(b). ²⁶³ Principle 5(e). ²⁶⁴ Principle 5(d).

²⁶⁵ On access to information, see Chapter 15, pp. 707–8. ²⁶⁶ Principle 6(5). ²⁶⁷ Principle 8(2).

²⁶⁸ Principle 7.

adopted for damage caused by hazardous substances and wastes (including their international trade),²⁶⁹ living modified organisms,²⁷⁰ and for environmental damage resulting from certain dangerous activities.²⁷¹ Efforts to develop general rules of civil liability for damage arising from unspecified activities, such as the 1993 Lugano Convention adopted by the Council of Europe, have been notably less successful and have not entered into force.

Typically, the civil liability regimes follow a similar approach, establishing rules which:

- (1) define the activities or substances covered;
- (2) define the damage (to persons, property and the environment);
- (3) channel liability;
- (4) establish a standard of care (usually strict liability);
- (5) provide for liability amounts;
- (6) allow exonerations;
- (7) require the maintenance of adequate insurance or other financial security;²⁷²
- (8) identify a court or tribunal to receive the claims; and
- (9) provide for the recognition and enforcement of judgments.

Nuclear Installations²⁷³

Three treaty regimes specifically regulate civil liability for risks from the peaceful use of nuclear energy. The first, operating under the auspices of the OECD, is the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (1960 Paris Convention)²⁷⁴ and its 1963 Brussels Supplementary Convention.²⁷⁵ The second, under the auspices of the IAEA, is the 1963 IAEA Vienna Convention on Civil Liability for Nuclear Damage (1963 Vienna Convention)²⁷⁶ and its 1997 amending Protocol.²⁷⁷ There also exists a third agreement under the auspices of the IAEA known as the Convention on Supplementary Compensation (1997 Supplementary Compensation Convention).²⁷⁸ Other agreements have been concluded in respect of damage caused by nuclear ships.²⁷⁹ The Paris and Vienna Conventions generally follow the same approach, although the latter is potentially

²⁶⁹ See the 1989 Basel Convention, Art. 12; the 1999 Basel Liability Protocol; and the 2010 HNS Protocol.

²⁷⁰ 2010 Nagoya-Kuala Lumpur Supplementary Protocol. ²⁷¹ 2003 Civil Liability Protocol.

²⁷² See OECD, *Pollution Insurance and Compensation Funds for Accidental Pollution* (1991).

²⁷³ See generally P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), ch. 9.

²⁷⁴ 29 July 1960, in force 1 April 1968, 956 UNTS 251 (as amended by 1964 and 1982 Protocols); sixteen states are party.

²⁷⁵ OECD Agreement Supplementary to the Paris Convention of 1960 on Third Party Liability in the Field of Nuclear Energy, 31 January 1963, in force 4 December 1974, 1041 UNTS 358 (as amended by 1964 and 1982 Protocols); thirteen states are party.

²⁷⁶ Vienna, 21 May 1963, in force 12 November 1977, 1063 UNTS 265; forty states are party.

²⁷⁷ Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, Vienna, 12 September 1997, 4 October 2003, 36 ILM 1454 (1997); thirteen states are party.

²⁷⁸ Convention on Supplementary Compensation for Nuclear Damage, Vienna, 12 September 1997, in force 15 April 2015, 36 ILM 1473 (1997); eight states are party.

²⁷⁹ Brussels Convention on the Liability of Operators of Nuclear Ships, 25 May 1962, not in force, 57 *American Journal of International Law* 268 (1963); M. J. L. Hardy, 'The Liability of Operators of Nuclear Ships', 12 *International and Comparative Law Quarterly* 778 (1963); P. Szasz, 'The Convention on the Liability of Operators of Nuclear Ships', 2 *Journal of Maritime Law and Commerce* 541 (1970-1); J. Handrlica, 'Facing Plans for Multiplying Nuclear-Powered Vessels: Lessons Gained from the Brussels Convention on the Liability of Operators of Nuclear Ships of 1962', 2(4) *International Journal of Nuclear Law* 313 (2009). See also 1963 Netherlands-United States Agreement on Public Liability for Damage Caused by the NS Savannah, The Hague, 6 February 1963, 487 UNTS 113.

of global application. Protocols for the amendment of the Paris and Vienna Conventions were adopted in 2004, essentially to increase the amounts of compensation available. Compared to oil spill regimes, however, these 'improvements' were somewhat marginal, and it is likely that these instruments would be overwhelmed and wholly inadequate in the event of a major nuclear accident.²⁸⁰

1960 Paris Convention and 1963 Brussels Convention

The purpose of the Paris Convention is to harmonise national legislation with regard to third party liability and insurance against nuclear risks and to establish a regime of minimum standards for liability and compensation in the event of a nuclear incident, as defined in Article 1(a)(i). The Paris Convention generally applies only to nuclear incidents occurring, and damage suffered, in the territory of contracting parties.²⁸¹ A party in whose territory the nuclear installation of the operator liable is situated is free to provide otherwise in its national legislation,²⁸² but the Convention is silent as to damage in areas beyond national jurisdiction.

The operator of the nuclear installation,²⁸³ whether a private entity or the state, is strictly liable for injury to or loss of life of any person and damage to or loss of property; no provision is made for liability in respect of environmental damage.²⁸⁴ Liability generally extends to damage caused by incidents outside the installation during carriage to another installation or to other persons.²⁸⁵ This applies also to incidents involving nuclear substances in the course of carriage to or from that installation.²⁸⁶ The operator's liability may be established by proving a causal connection between the damage and the nuclear incident; proof of fault on the part of the operator is not required, although the rule does not establish 'absolute' liability since exceptions to the operator's liability are provided by Articles 4 and 9. Unless a longer period is provided by national legislation, claims must be brought within ten years from the date of the nuclear incident.²⁸⁷ Jurisdiction over actions will generally lie with the courts of the party in whose territory the nuclear incident occurred,²⁸⁸ and a state may not, except in respect of measures of

²⁸⁰ Damage from the Fukushima nuclear power plant disaster in March 2011 was not covered as Japan at the time of the accident was not a party to any international nuclear liability convention, however, under the Japanese third party liability legislation the operator of the Fukushima plant is required to secure its liability up to JPY 120 billion. See OECD NEA, *Japan's Compensation System for Nuclear Damage* (2012). Analyses have suggested a major nuclear accident could be extremely costly, with some studies suggesting that it could cost as much as £5000 billion: D. Currie, 'Problems and Gaps in the Nuclear Liability Conventions and an Analysis of How an Actual Claim Would Be Brought under the Current Existing Treaty Regime in the Event of a Nuclear Accident', 35 *Denver Journal of International Law and Policy* 85 (2006).

²⁸¹ Art. 2. ²⁸² *Ibid.*

²⁸³ 'Nuclear installation' includes reactors other than those used in a means of transport, factories for manufacturing or processing nuclear substances or separating isotopes of or reprocessing nuclear fuels, and storage facilities for nuclear substances (Art. 1(a)(ii)); 'nuclear substances' means nuclear fuel and radioactive products or waste (Art. 1(a)(iv)).

²⁸⁴ Art. 3(a). Even this restrictive provision has been interpreted by the English High Court to exclude 'pure economic loss' (see *Merlins v. British Nuclear Fuels plc* [1990] 3 All ER 711). Other countries, such as the Netherlands and Germany, have extended their domestic legislation to include 'environmental' damage.

²⁸⁵ Art. 4(b). See also the Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 17 December 1971, in force 15 July 1975, Misc. 39 (1972), Cmnd 5094. The 1971 Convention is intended to ensure that the operator of a nuclear installation will be exclusively liable for damage caused by a nuclear incident occurring in the course of maritime carriage of nuclear material by exonerating any person apart from the operator of a nuclear installation from liability for such damage (Arts. 1 and 2).

²⁸⁶ Art. 4. ²⁸⁷ Art. 8.

²⁸⁸ Art. 13(a). See also the 1962 Brussels Nuclear Ships Convention, not in force, which allows the claimant to bring a claim either to the courts of the licensing state or to the courts of the party in whose territory nuclear damage has been sustained (Art. X(1)).

execution, invoke any jurisdictional immunities.²⁸⁹ Judgments are enforceable in the territory of any party, and the Convention is to be applied without discrimination as to nationality, domicile or residence.²⁹⁰

Under the 1960 Paris Convention, the operator's maximum liability for damage caused by a nuclear incident is fifteen million European Monetary Agreement units of account (approximately \$15 million USD), although any party may establish a greater or lesser amount, but not less than five million units of account.²⁹¹ Operators are required to maintain insurance or other financial security.²⁹²

Recognising that in many cases the damage suffered might exceed the operator's liability, most parties to the 1960 Paris Convention have ratified the 1963 Brussels Supplementary Convention, which increases the total amount of compensation available to 120 million units of account per incident.²⁹³ Under the 1963 Supplementary Convention, the operator's liability is unchanged, but the party in whose territory the installation is situated is required to provide additional compensation of up to 70 million units of account.²⁹⁴ Should the damage exceed this amount, further compensation up to 120 million units of account is to be paid jointly by the parties to the 1963 Supplementary Convention according to a formula reflecting each party's gross national product and the thermal power of reactors situated in its territory.²⁹⁵ In 1982, further Protocols to the Paris Convention and the Brussels Supplementary Convention were adopted, which changed the unit of compensation to the 'special drawing rights' (SDRs) of the IMF and increased the compensation payable by a party and by parties jointly to 175 million SDRs and 300 million SDRs respectively.²⁹⁶

The 1986 Chernobyl accident demonstrated that there was a need to increase the amounts of liability under the Paris and Brussels Supplementary Conventions further and to broaden the coverage of types of damage. In response, a major international modernisation effort was undertaken, with the aim of ensuring that victims in all countries affected by a nuclear accident would be accorded equitable compensation for damage suffered. This effort also encompassed amendments to the Vienna Convention in 1997, discussed below. The result was the revision of the Paris and Brussels Supplementary Conventions in two Protocols adopted in 2004.²⁹⁷ Neither Protocol has yet entered into force.

Under the 2004 Protocol to the Paris Convention, a nuclear operator's maximum liability for any one nuclear incident will be increased to an amount not less than €700 million, although any party may establish a greater or lesser amount, but not less than €70 million.²⁹⁸ The 2004 Protocol also recognises the possibility of a state party adopting an unlimited liability regime; however, in such cases, a limit must be established upon the financial security required of operators equal to €700 million or a lesser amount.²⁹⁹ Also extended is the range of damage covered: the 2004 Protocol would amend the Paris Convention to include new heads of damage including 'the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant', 'loss of income deriving from a direct economic interest in any use or

²⁸⁹ Art. 13(e). ²⁹⁰ Arts. 13(d) and 14. ²⁹¹ Art. 7(b). ²⁹² Art. 10. ²⁹³ Art. 3(a). ²⁹⁴ Art. 3(b)(ii).

²⁹⁵ Arts. 3(b)(iii) and 12. ²⁹⁶ Paris, 16 November 1982, IELMT 963:101B.

²⁹⁷ 2004 Protocol to Amend the Paris Convention; 2004 Protocol to Amend the Brussels Supplementary Convention on Nuclear Third Party Liability.

²⁹⁸ 2004 Paris Convention Protocol, para. H, amending Art. 7(a) and (b); €80 million is the minimum specified for transport activities.

²⁹⁹ Para. K, amending Art. 10(b).

enjoyment of the environment, incurred as a result of a significant impairment of that environment' and 'the costs of preventive measures, and further loss or damage caused by such measures'.³⁰⁰ In addition, damage from a greater range of nuclear installations is covered, such as installations that are in the course of being decommissioned and all nuclear installations for the disposal of nuclear substances.³⁰¹

Under the Paris Convention, a nuclear incident must occur in the territory of a contracting party and damage must be suffered there in order for the Convention to apply. The 2004 Protocol would remove this limitation to apply also to nuclear damage suffered in a non-Convention state (including its territories and maritime zones) if it is a party to the Vienna Convention and the 1988 Joint Protocol (see below), or if it has no nuclear installations, or its nuclear liability legislation affords equivalent reciprocal benefits and is based on principles identical to those contained in the Paris Convention.³⁰² In respect of coastal states through whose waters shipments of nuclear materials are allowed, the 2004 Protocol provides that where a nuclear incident occurs in the state's exclusive economic zone its courts shall have exclusive jurisdiction in respect of claims for nuclear damage arising from that incident.³⁰³ Finally in recognition of the long-term effects of nuclear damage, the 2004 Protocol extends the time limit for bringing claims to thirty years for claims with respect to loss of life and personal injury, although the ten-year limit still applies with respect to other nuclear damage.³⁰⁴ The 2004 Protocol to the Brussels Supplementary Convention makes amendments to that Convention to bring it into accord with the amended Paris Convention. In particular, the maximum amounts of compensation payable have been increased: to €700 million for operator liability; an additional €500 million for states in whose territory a liable operator is situated, and a further €300 million made available by all of the contracting parties.³⁰⁵ Contributions to the latter fund will continue to be based on a formula reflecting parties' gross national product and installed nuclear capacity but in different ratios: 35 per cent based on gross domestic product and 65 per cent on installed nuclear capacity.³⁰⁶ The 2004 Protocol to the Brussels Convention also provides for an extended ambit of operation, under specified circumstances, to nuclear damage suffered in or above maritime areas beyond the territorial sea of a contracting party or in or above a contracting party's exclusive economic zone.³⁰⁷

1963 Vienna Convention³⁰⁸

The provisions of the 1963 Vienna Convention, which are not to be construed as 'affecting the rights, if any, of a contracting party under the general rules of public international law in respect of nuclear damage',³⁰⁹ are generally to the same effect as those of the Paris Convention. The operator is liable for 'nuclear damage', which is defined as loss of life, personal injury or damage

³⁰⁰ Para. B, amending Art. 1(a)(vii). In relation to the first two categories, such damage is only compensable in so far as they are not encompassed within loss or damage to property. 'Measures of reinstatement' are defined to mean 'any reasonable measures which have been approved by the competent authorities of the State where the measures were taken, and which aim to reinstate or restore damaged or destroyed components of the environment, or to introduce, where reasonable, the equivalent of these components into the environment'. 'Preventive measures' means any reasonable measures taken by any person after a nuclear incident or an event creating a grave and imminent threat of nuclear damage has occurred, to prevent or minimise nuclear damage.

³⁰¹ Para. A, amending Art. 1(a)(ii). ³⁰² Para. C, amending Art. 2. ³⁰³ Para. M, amending Art. 13.

³⁰⁴ Para. I, amending Art. 8(a). ³⁰⁵ Para. C, amending Art. 3. ³⁰⁶ Para. L, amending Art. 12.

³⁰⁷ Para. B, amending Art. 2.

³⁰⁸ See n. 277. See IAEA, 'Civil Liability for Nuclear Damage', Official Records, Legal Services No. 2, 149ff. (1964) (*travaux préparatoires*).

³⁰⁹ Art. XVIII.

to property, upon proof that such damage was caused by a nuclear incident in the installation or, with certain limitations, in the course of carriage to or from the installation.³¹⁰ The Vienna Convention does not specifically provide for liability for environmental damage, although it allows the law of the competent court to provide for other damage.³¹¹ Liability is stated to be absolute, although provision is made for certain defences and exceptions.³¹² Generally, actions must be brought within ten years from the date of the nuclear incident, and jurisdiction over actions lies only with the courts of the party within whose territory the nuclear incident occurred.³¹³ If an action is brought against a state, it may not, except in respect of measures of execution, invoke any jurisdictional immunities.³¹⁴ Final judgments that are recognised are enforceable in the territory of any party.³¹⁵ The Vienna Convention allows the installation state to limit the operator's liability, but in no event may it be limited to less than \$5 million USD for any nuclear incident.³¹⁶ Operators must maintain insurance or other financial security; however, if the security is inadequate to satisfy claims, Article VII provides that the installation state is required to meet any deficiencies up to the limit, if any, of the operator's liability as established under Article V. In contrast to the position under the 1963 Brussels Supplementary Convention, no provision is made for further compensation beyond this limit by either the installation state or the parties jointly.

The Chernobyl accident highlighted the inadequacies of the liability regime established by the Paris and Vienna Conventions.³¹⁷ The accident on 26 April 1986 released large amounts of radioactivity and led to increased levels of radiation over an extensive area.³¹⁸ In the former Soviet Union, more than 100,000 people were evacuated from a radius of twenty miles around the plant within thirty-six hours, and thirty-one people died as a direct result within a few weeks. Within six months of the accident, the IAEA had sponsored two new international conventions on emergency notification and assistance,³¹⁹ and the issue of nuclear liability returned to the international agenda. The Board of Governors of the IAEA, having considered a background paper by the IAEA secretariat on the question of international liability for nuclear damage,³²⁰ asked the secretariat to 'consider whether it was necessary to devise a new instrument on state liability for nuclear damage ... full account being taken of the work of the [ILC]'.³²¹

³¹⁰ Arts. I(1)(k) and II(1). See also the Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, n. 286.

³¹¹ Art. I(1)(k)(ii). ³¹² Art. IV. ³¹³ Arts. VI and XI. ³¹⁴ Art. XIV. ³¹⁵ Art. XII(1) and (2). ³¹⁶ Art. V.

³¹⁷ The 2011 Fukushima Daiichi accident in Japan has prompted further soul-searching regarding the adequacy of the international nuclear liability regime, however, so far this has not resulted in amendments to the treaty regimes. For IAEA discussion of the need for a comprehensive global nuclear liability regime, see International Atomic Energy Agency, 'IAEA Action Plan on Nuclear Safety' (2014), available at www.iaea.org/sites/default/files/actionplannns.pdf

³¹⁸ Increased radiation levels were subsequently observed, inter alia, in Sweden, Denmark, Finland and Poland (27 April); Austria, German Democratic Republic, Hungary, Italy, Norway and Yugoslavia (29 April); Federal Republic of Germany, Switzerland and Turkey (30 April); France (1 May); Belgium, Greece, the Netherlands and the United Kingdom (2 May); and Iceland (7 May). Low-level increases were also detected in Japan and the United States. Significant increases of particular danger to human health and the environment were observed in levels of iodine-131, caesium-134 and caesium-137 immediately after the accident; see Summary Report of 22 July 1986 of the Working Group on Assessment of Radiation Dose Contamination in Europe Due to the Chernobyl Accident, noted in 28(3) *IAEA Bulletin* 27 (1986).

³¹⁹ See Chapter 12, pp. 599–600.

³²⁰ IAEA, Note by Director General, 'The Question of International Liability for Damage Arising from a Nuclear Accident', IAEA Doc. GOV/INF/509, Annex (1987).

³²¹ IAEA, Note by Director General, 'The Question of Liability for Damage Arising from a Nuclear Accident', IAEA Doc. GOV/2306, para. 1 (1987).

The secretariat concluded that 'there seems to be no doctrinal obstacle to the elaboration of special rules intended to regulate international liability for nuclear damage', the rules of which might result from the work of the ILC,³²² and suggested that a new instrument

could complement the existing civil law conventions on nuclear liability . . . in those areas where their regimes are incomplete because of legal lacunae (claims between states, damage to the environment) and it could provide the necessary framework for possibly combining international liability aspects and the issues already covered by the Vienna and Paris Conventions into a comprehensive nuclear liability regime, giving the parties to either of these instruments the option of providing remedies in accordance with appropriate procedures to be embodied within the framework.³²³

In 1989, the IAEA established a Standing Committee on Nuclear Liability to revise the 1963 Vienna Convention, which resulted in the adoption of the 1997 Protocol to the 1963 Vienna Convention, and the 1997 Convention on Supplementary Compensation. The slow progress of the Standing Committee's work reflected political and economic sensitivities, and illustrated the difficulties in developing liability rules in other areas. A number of important nuclear power states, including France, the United Kingdom and the United States, strongly opposed rules of state liability in the amendments.

Controversial issues in the negotiations included the extension of the 1963 Vienna Convention to military installations, its application to damage in areas outside the territory of parties (including areas beyond national jurisdiction), and liability for environmental damage. Two other difficult issues concerned the extent to which the limits on the operator's liability should be increased, and the differences between states supporting full compensation for the victim and restoration of the environment, and states wishing to limit liability to protect nuclear industries from insurance and other costs. Underlying the debate was concern that increases in the operator's maximum liability to adequately cover a major accident would make the insurance of nuclear plants difficult (if not impossible) in many countries and could limit the further development of nuclear power. On the other hand, it was clear that any limitation on liability amounted to an interference with the application of the polluter pays principle and a de facto subsidy to the nuclear industry.³²⁴

Another issue that caused difficulty at the IAEA Standing Committee was the question of whether to establish an international claims tribunal to handle claims that might follow a major nuclear incident.³²⁵ Supporters of the original 1963 system, which requires all claims to be channelled to the courts (or a court) of the state in which the accident occurred, argued that this was the only way to achieve a uniform interpretation of the rules and an equitable disbursement of the funds in the context of the limited sums available. Opponents pointed out that it was unrealistic to expect individuals to file claims in a court located several thousand miles away and that no national court could cope with the deluge of claims that would follow a major accident. They also pointed out that the original system provided no incentive for countries such as Ireland and Luxembourg to join the conventions when their citizens could benefit from rights provided

³²² *Ibid.*, Annex 2, paras. 2 and 3. On the ILC's work in this regard, see pp. 769–70. ³²³ *Ibid.*, Annex 2, para. 4.

³²⁴ See Chapter 6, 240–1.

³²⁵ See, in this regard, the Marshall Islands Nuclear Claims Tribunal, and its decision in respect of US nuclear testing around the Marshall Islands (1946–58), p. 754.

under the conventional rules of private international law, allowing them to choose their jurisdiction.³²⁶ In the end, the proponents of the original arrangements prevailed.

The 1997 Protocol entered into force on 4 October 2003, introducing several amendments for its parties.³²⁷ As to the definition of 'nuclear damage', the Protocol specifies with greater particularity the types of damage which the laws of the competent court may treat as giving rise to liability, including economic loss, the costs of measures of reinstatement of impaired environment (unless insignificant), the costs of preventive measures, and loss of income deriving from an economic interest in any use or enjoyment of the environment (as a result of a significant impairment of that environment).³²⁸ It is important to note, however, that the amended Convention does not require environmental damage to be compensated: only loss of life or personal injury or damage to property must be compensated. Among the other clarifications is a provision to the effect that nuclear installations used for 'non-peaceful purposes' are excluded from the Convention,³²⁹ and that the Convention applies 'to nuclear damage suffered anywhere', subject to the right of a party to exclude damage suffered in the territory of a non-party or in any maritime zones established by a non-party in accordance with international law (provided these non-parties also possess nuclear installations within their territory and maritime zones but do not provide reciprocal benefits).³³⁰ The ability of a party to limit the liability of an operator is amended to establish a floor of not less than 300 million SDRs,³³¹ with consequential changes to the provisions on financial security.³³² Prescription periods were amended to a minor extent.³³³ The exclusive jurisdiction of the courts of the party in whose territory the nuclear incident occurred remains, but is extended to encompass damage occurring in the exclusive economic zone.³³⁴ States are able to bring an action (in the party's courts having jurisdiction) on behalf of persons who have suffered damage,³³⁵ and the Protocol introduced a dispute settlement clause into the Convention.³³⁶ Overall, these are modest amendments, which do not modify the basic approach of the 1963 Convention or address the fundamental criticisms that have been levelled towards it.

1988 Joint Protocol

In 1988, a Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention³³⁷ linked the operative parts of the Paris and Vienna Conventions by providing that

³²⁶ See 1968 Brussels Convention and 1988 Lugano Convention; Chapter 5, pp. 165–6.

³²⁷ A state which is a party to the Protocol but not to the 1963 Convention is bound by the provisions of the Convention as amended, unless it expresses a different intent at the time of becoming a party, in which case it is bound by the 1963 Convention in relation to states which are parties only to the Convention: 1997 Protocol, Art. 19(1).

³²⁸ 1997 Protocol, Art. 2, amending Art. I(k) of the 1963 Convention. Art. 2(4) of the 1997 Protocol provides new definitions. Once the 2004 Protocol to the Paris Convention enters into force, the two nuclear liability regimes will cover the same types of nuclear damage.

³²⁹ *Ibid.*, Art. 3, establishing a new Art. IB to the 1963 Convention.

³³⁰ *Ibid.*, establishing a new Art. IA to the 1963 Convention.

³³¹ 1997 Protocol, Art. 7(1), replacing Art. V of the 1963 Convention. The Protocol provides for 'transitional arrangements' for up to fifteen years, during which limits may be 100 million SDRs (Art. 7(2)). See also Arts. VA to VD, providing, *inter alia*, for: payment of interest and costs; enforcement; and amendments to limits of liability by decision of the parties.

³³² 1997 Protocol, Art. 9, amending Art. VI of the 1963 Convention.

³³³ *Ibid.*, Art. 8, amending Art. VI of the 1963 Convention.

³³⁴ *Ibid.*, Art. 12, establishing a new Art. XI(1*bis*) to the 1963 Convention.

³³⁵ *Ibid.*, Art. 13, establishing a new Art. XIA to the 1963 Convention.

³³⁶ *Ibid.*, Art. 17, establishing a new Art. XXA to the 1963 Convention.

³³⁷ Vienna, 21 September 1988, in force 27 April 1992, 42 *Nuclear Law Bulletin* 56 (1998).

the operator of a nuclear installation in the territory of a party to either the Paris or Vienna Convention will be liable under that Convention for nuclear damage suffered in the territory of a state which is a party to the other Convention and the Protocol.³³⁸ The Joint Protocol provides for the exclusive application of each Convention and sets forth choice-of-law rules.³³⁹

1997 Convention on Supplementary Compensation

In conjunction with the adoption of the 1997 Protocol to the Vienna Convention, there was also adopted a 1997 Convention on Supplementary Compensation (CSC), which entered into force on 15 April 2015.³⁴⁰ The CSC represents an alternative nuclear liability regime that is intended to supplement the system of compensation that is provided under national law pursuant to the Paris and Vienna Conventions (and any amendments to them). However, it is also open to participation from states which are not party to the Paris or Vienna Conventions but whose national legislation complies with the standards established in the CSC's Annex.³⁴¹ Parties are to ensure the availability of 300 million SDRs or other amount as permitted and notified and, beyond that amount, additional public funds as required pursuant to a formula established under Article IV of the Convention.³⁴² The Convention provides detailed rules on the organisation of supplementary funding once it appears that damage caused by an incident exceeds the amount available under Article III(1)(a), as well as rules on jurisdiction and applicable law, generally following the approach in the Paris and Vienna Conventions.³⁴³

Oil Pollution

Civil liability for damage caused by oil pollution is principally governed by three well-developed and well-applied international instruments adopted under the auspices of the IMO: the Brussels International Convention on Civil Liability for Oil Pollution Damage (1992 CLC); the Brussels International Convention on the Establishment of an International Fund for Compensation of Oil Pollution Damage (1992 Oil Fund Convention); and the 2003 Protocol to the 1992 Oil Fund Convention (2003 Supplementary Fund Convention);³⁴⁴ together with a Convention on Civil Liability for Bunker Oil Pollution Damage, adopted in 2001. In the 1970s, three private arrangements were set up to increase the amounts of funding available, but two – TOVALOP and CRISTAL – were wound up in 1997, after the entry into force of the 1992 Conventions. They have since been replaced by two new arrangements: STOPIA 2006 and TOPIA 2006.³⁴⁵

³³⁸ Arts. II and IV. ³³⁹ Art. III. ³⁴⁰ See n. 279.

³⁴¹ Art. II(1). The Convention is open to states such as the United States that are not party to the Paris or Vienna Conventions. The United States and Japan, as well as India, are all parties to the CSC.

³⁴² Art. III(1). The formula is (i) the amount which is the product of the party's installed nuclear capacity multiplied by 300 SDRs per unit of installed capacity, plus (ii) the amount determined by applying the ratio between the party's UN rate of assessment as assessed for the year preceding that in which the nuclear incident occurs, and the total of such rates for all parties to 10 per cent of the sum of the amounts calculated for all parties under (i) above, subject to a maximum contribution and the principle that states on the minimum UN rate of assessment with no nuclear reactors will not be required to make a contribution (Art. IV(1)).

³⁴³ Arts. VI–XII and XIII–XIV.

³⁴⁴ The consolidated texts of all three treaties can be found at IOPC Funds, Liability and Compensation for Oil Pollution Damage (2011 edn), available at www.iopcfunds.org/fileadmin/IOPC_Upload/Downloads/English/Text_of_Conventions_e.pdf

³⁴⁵ See further, www.iopcfunds.org/about-us/legal-framework/stopia-2006-and-topia-2006

1992 Civil Liability Convention³⁴⁶

The original CLC was adopted in 1969 following the accident involving the Liberian-registered *Torrey Canyon*, which ran aground in the Atlantic off the southwest coast of Britain on 18 March 1967 while carrying nearly 120,000 tonnes of crude oil. The escape of oil caused widespread damage to the British coastline and to marine life, and eventually polluted the coast of France.³⁴⁷

The accident led to a conference held in Brussels in 1969 and the adoption of two conventions: the 1969 Intervention Convention³⁴⁸ and the 1969 CLC. The latter was the subject of three amending Protocols, culminating with that in 1992. With the entry into force of the 1992 Protocol, the 1969 CLC is now known as the International Convention on Civil Liability for Oil Pollution Damage 1992 (1992 CLC).

The 1992 CLC establishes the liability of the owner of a ship for pollution damage caused by oil escaping from the ship as a result of an incident on the territory of a party (including its territorial sea), and covers preventive measures to minimise such damage.³⁴⁹ 'Pollution damage' is defined as:

- (a) loss or damage caused outside the ship by contamination, resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, provided that compensation for impairment of the environment other than loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken;
- (b) the costs of preventative measures and further loss or damage caused by preventative measures.³⁵⁰

This definition, which developed the previous 1969 definition,³⁵¹ implies that it is intended to include compensation for impairment of the environment. However, in order for a claim for environmental damage to be brought, measures must be 'reasonable' and 'actually undertaken or to be undertaken'. The 1992 CLC establishes joint and several liability for damage which is not 'reasonably separable', and allows a limited number of exceptions, including war and hostilities, intentional acts, governmental negligence and contributory negligence. It extinguishes all other claims for compensation.³⁵² Under the original 1969 CLC, the owner could limit liability to 2,000

³⁴⁶ Originally adopted in 1969, 29 November 1969, in force 19 June 1975, 973 UNTS 3; amended by the 1976 Protocol, 19 November 1976, in force 8 April 1981, 16 ILM 617 (1977); 1984 Protocol, 25 May 1984, not in force, 23 ILM 177 (1984); and 1992 Protocol (1992 CLC Convention), 27 November 1992, in force 30 May 1996, IMO LEG/CONF.9/15. The 1992 CLC replaced the 1984 Protocol and entered into force after it had been ratified by at least four states each with not less than 1 million units of gross tanker tonnage (Art. 13 (the 1984 Protocol required ratification by six such states)); 136 states are party to the 1992 CLC.

³⁴⁷ See the report prepared by the UK Home Office, *The Torrey Canyon*, Cmnd 3246 (1967); C. Gill, F. Booker and T. Soper, *The Wreck of the Torrey Canyon* (New York: David & Charles, 1967); Brown, 21 *Current Legal Practice* 216 (1968); *British Practice in International Law* 90–2 (1967).

³⁴⁸ Chapter 11, pp. 501–2.

³⁴⁹ Arts. II and III(1). The Convention does not apply to warships or other ships owned or operated by a state and being used at the time of the incident for non-commercial purposes (Art. XI(1)). Art. 3 of the 1992 Protocol extended the application of the Convention to pollution damage caused in the EEZ of a party or, if the party has not declared an EEZ, to the area extending to no more than 200 nautical miles from the baseline from which its territorial sea is measured.

³⁵⁰ 1992 Protocol, Art. 2(3). The 1992 Protocol amended the definitions of other terms, including 'ship', 'oil' and 'incident' (Art. 2).

³⁵¹ The 1969 CLC defined 'pollution damage' as 'loss or damage caused outside the ship carrying oil by contamination resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, and includes the cost of preventive measures and further loss or damage caused by preventive measures' (Art. I(6)). 'Preventive measures' were limited to 'reasonable measures' to prevent or minimise pollution damage (Art. I(7)).

³⁵² Arts. III(2) and (3) and IV.

francs for each tonne of the ship's net tonnage with an overall limit on liability of 210 million francs, but could not avail itself of the limit if the incident was the result of the owner's 'actual fault or privity'.³⁵³ The permitted limits were increased by the 1992 CLC to 3 million SDRs for ships not exceeding 5,000 units of tonnage, and 420 SDRs for each additional unit of tonnage to a maximum of 59.7 million SDRs.³⁵⁴ The owner must maintain insurance or other financial security to cover its liability and, to limit its liability, establish a fund for the total sum of liability with the court in which action is brought.³⁵⁵ Under the 1992 CLC, claims may be brought before the courts of any party or parties in which the pollution damage has occurred or the preventive measures have been taken, and judgments are generally recognisable and enforceable in the courts of all parties.³⁵⁶ The court in which a fund is established is exclusively competent to apportion and distribute the fund.³⁵⁷ A hierarchical relationship exists between the 1992 Liability Convention and the 1992 Fund Convention with prior application of the latter.³⁵⁸

The 1992 Fund Convention³⁵⁹

The original Fund Convention was adopted in 1971 under the auspices of an International Legal Conference on Marine Pollution Damage to provide additional compensation for victims of oil pollution and to transfer some of the economic consequences to the owners of the oil cargo, as well as the shipowner subject to the 1969 CLC. The 1971 Convention represented the first time that linkage in an international legal instrument was explicitly made between the extent of a person's liability and compliance with obligations found in other treaties. The 1971 Fund Convention was amended by three Protocols, culminating with that in 1992. With the entry into force of the 1992 Protocol, the 1971 Fund Convention is known as the International Convention on the Establishment of an International Fund for Oil Pollution Damage, 1992 (1992 Fund Convention). Since their establishment, the 1992 Fund and its preceding 1971 Fund have been involved in the settlement of claims arising out of almost 150 incidents and have paid out some £570 million in compensation.³⁶⁰

³⁵³ Art. V. The 1992 Protocol amended Art. V(2) by removing the owner's entitlement to limit liability if it is proved that the pollution damage resulted from the owner's 'personal act or omission, committed with the intent to cause such damage or recklessly and with knowledge that such damage would probably result' (Art. 4(2)). The 1992 Protocol established procedures for amending the limitation amounts (Art. 15).

³⁵⁴ Art. 6(1). The IMO's Legal Committee increased the compensation limits by 'tacitly amending' Art. 6(1) to 4.51 million SDRs for ships not exceeding 5,000 units of gross tonnage and 631 SDRs for each additional unit of tonnage to a maximum, at 140,000 units of tonnage, of 89.77 million SDRs. The amendment entered into force on 1 November 2003.

³⁵⁵ Arts. V(3), VI and VII. ³⁵⁶ Arts. IX(1) and X. ³⁵⁷ Art. IX(3).

³⁵⁸ 1992 Protocol, Art. 9, establishing a new Art. XII^{bis} to the 1992 Convention.

³⁵⁹ Originally adopted in Brussels, 18 December 1971, in force 16 October 1978, 1110 UNTS 57, amended by Protocol, London, 19 November 1976, not yet in force, 16 ILM 621 (1977); 1984 Protocol, 25 May 1984, not yet in force; 1992 Fund Protocol, 27 September 1992, in force 30 May 1996, IMO LEG/CONF.9/16. The 1971 Fund Convention ceased to be in force on 24 May 2002, when the number of 1971 Fund member states fell below twenty-five. The 1992 Protocol entered into force after ratification by eight states in which contributing importers had received a total of 450 million tonnes of oil in the preceding calendar year (the 1984 Protocol required eight states and 600 million tonnes). 114 states are party to the 1992 Fund Convention. In May 2003, a diplomatic conference adopted a Protocol on the Establishment of a Supplementary Fund for Oil Pollution Damage, creating an additional, third tier of compensation (Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992, London, 16 May 2003, in force 3 March 2005).

³⁶⁰ International Oil Pollution Compensation Funds, *Annual Report 2015*, 4, available at www.iopcfunds.org/publications

In general, the 1992 Fund Convention adopts the same definitions as the 1992 CLC.³⁶¹ The 1992 Fund Convention, which establishes an International Oil Pollution Compensation Fund (IOPC Fund), has as its objective to provide compensation for pollution damage that is inadequately compensated by the 1992 CLC.³⁶² To fulfil its objective, the Fund pays compensation to any person suffering pollution damage if that person has been unable to obtain 'full and adequate' compensation under the 1992 CLC because no liability arises under that Convention, or the owner cannot meet obligations under that Convention, or the liability exceeds the limit established by that Convention.³⁶³ The 1992 Fund Convention limits the obligation of the Fund in certain situations, including war, lack of evidence that the damage resulted from an incident involving one or more ships, damage by warships or state-operated non-commercial ships, and contributory negligence.³⁶⁴

Originally, compensation payable under the 1971 Fund was limited to 450 million francs per incident, and an aggregate of 450 million francs for pollution damage 'resulting from a natural phenomenon of an exceptional, inevitable and irresistible character'.³⁶⁵ At its ninth session, the Fund Assembly increased the aggregate amount of compensation payable by the Fund for any one incident to 900 million francs (60 million SDRs) for incidents occurring after 30 November 1987.³⁶⁶ The 1976 Protocol amended the ceilings to 30 million SDRs or 450 million monetary units and 60 million SDRs or 900 million monetary units respectively.³⁶⁷ The 1992 Protocol replaced the entire text of Article 4(4) of the 1971 Fund Convention with a new provision increasing the maximum liability to 135 million SDRs per incident or for certain natural damage, and to 200 million SDRs for any period when there are three parties to the Convention where the combined relevant quantities of contributing oil received by persons in the territories of those parties equalled or exceeded 600 million tonnes in the preceding year.³⁶⁸ In 2000, the Legal Committee of the IMO adopted a resolution further increasing the limits contained in the 1992 Fund Convention for incidents occurring on or after 1 November 2003. Pursuant to these amendments, the maximum amount payable by the 1992 Fund was raised to 203 million SDRs for any one incident.³⁶⁹

The 1992 Fund Convention limits periods for the bringing of claims, and requires any action against the Fund for compensation to be brought only before a court competent under Article IX of the 1992 CLC.³⁷⁰ Where an action has been brought before a court against an owner under the 1992 CLC, that court has exclusive competence over any action against the Fund under Article 4 of the 1992 Fund Convention in respect of the same damage.³⁷¹ Where that court is in a state that is not a party to the 1992 Fund Convention, the claimant may bring the case before the court where the Fund is headquartered (London) or any court of a party to the 1992 Fund Convention

³⁶¹ Art. 1. See also 1992 Protocol, Art. 2(3)-(6).

³⁶² Art. 2(1). The 1992 Protocol amended Art. 2(1) of the 1971 Fund Convention by removing a second objective (to relieve shipowners from additional financial burdens provided they have complied with safety at sea and other conventions) and extended the application of the Convention to include the EEZ or equivalent area (Arts. 3 and 4). The 1992 Protocol deleted Art. V of the 1971 Convention, whereby the Fund indemnified the owner and guarantor for that portion of the liability under the 1969 CLC that exceeded certain amounts (Art. 7).

³⁶³ Art. 4(1). ³⁶⁴ Art. 4(2) and (3); see also the 1992 Protocol, Art. 6(2). ³⁶⁵ Art. 4(4).

³⁶⁶ This is the maximum permitted under Art. 4(6) of the Fund Convention, and follows earlier increases to 675 million francs and 787.5 million francs.

³⁶⁷ Art. III(a). The 1984 Protocol would have amended Art. 4(6) by removing the right of the Assembly to increase the amounts of compensation, and provides for a new procedure for the amendment of compensation limits (Arts. 6(5) and 33).

³⁶⁸ Art. 6(3). ³⁶⁹ IMO Res. 82nd Session, 18 October 2000. ³⁷⁰ Arts. 6 and 7(1). ³⁷¹ Art. 7(3).

competent under Article IX of the 1992 CLC.³⁷² The 1992 Fund Convention also sets forth rules concerning the effect of judgments on the Fund, the recognition and enforcement of judgments, and rights of recourse and subrogation.³⁷³

Annual contributions to the Fund are made, in respect of each party, by any person (including associated persons) who has received a total of more than 150,000 tonnes of contributing oil in the ports or terminals in the territory of that party contributing oil carried by sea, and contributing oil first received in any installations situated in the territory of that party which has first been carried by sea and discharged in a port or terminal of a non-party.³⁷⁴ The assessment of each person's annual contribution that may be needed to balance the budget comprises a proportion of the total amount of contributions required by the Fund to fulfil its estimated annual expenditure.³⁷⁵ The 1992 Protocol's transitional provisions governed contributions and placed a limit, for up to five years, on the contribution of any one party to a maximum of 27.5 per cent of the total contributions to the Fund.³⁷⁶

The IOPC Fund, which has legal personality under the laws of each party,³⁷⁷ comprises an Assembly, a Secretariat and an Executive Committee.³⁷⁸ The Assembly, in which all parties to the Convention are members, has overall responsibility for the administration of the Fund and for the proper execution of the Convention, and its functions include approving the settlement of claims, taking decisions in respect of distributions under Article 4(5) and provisional payments, and electing the Executive Committee.³⁷⁹ There are fifteen members of the Executive Committee, elected on the basis of equitable geographic distribution, including parties particularly exposed to the risks of oil pollution and having large tanker fleets, and approximately one-half from those parties in whose territory the largest quantities of oil were received.³⁸⁰ The functions of the Executive Committee include approving the settlement of claims and giving instructions to the Director.³⁸¹

2003 Supplementary Fund Protocol

The *Erika* and *Prestige* incidents in 1999 and 2002 respectively³⁸² raised concerns among some states that the maximum compensation afforded by the 1992 Fund Convention was insufficient to meet compensation needs in some cases. Subsequent events, such as the *Hebei Spirit* incident in December 2007, which caused damage to most of the western coast of Korea with estimated losses of around KRW 438.5 billion (approximately 276,000 SDRs), bear out this concern.³⁸³

³⁷² *Ibid.* ³⁷³ Arts. 7(6), 8 and 9.

³⁷⁴ Arts. 10(1) and (2) and 12; 'contributing oil' means crude oil and fuel oil as defined in Art. 1(3)(a).

³⁷⁵ Art. 12(2) and (3).

³⁷⁶ 1992 Protocol, Art. 26, creating new Arts. 36*bis* and 36*ter* of the 1992 Fund Convention. This provision was included to encourage ratification by Japan, which in 1991 contributed 28.92 per cent of the Fund.

³⁷⁷ Art. 2(2). ³⁷⁸ Arts. 16–30. The 1992 Protocol discontinued the Executive Committee (Arts. 17–24).

³⁷⁹ Arts. 17 and 18. Decisions of the Assembly and the Executive Committee are generally taken on the basis of a simple majority of those present and voting, with special provision for certain decisions to be taken on the basis of a three-fourths or two-thirds majority of those present (Arts. 32 and 33).

³⁸⁰ Art. 22. ³⁸¹ Art. 26.

³⁸² As regards the *Erika* oil spill, see pp. 787–8. The *Prestige* oil spill was caused by the sinking of the Bahamian-registered tanker, the *Prestige*, approximately 30 kilometres off the coast of Galicia in Spain, and is widely recognised as the largest environmental disaster in that country's history, affecting several thousands of kilometres of coastline. More than 140,000 tonnes of waste were collected during clean-up operations (International Oil Pollution Compensation Funds, *Annual Report 2003*, available at www.iopcfunds.org/publications, 105–9); J. A. Juanesa, A. Puentea, J. A. Revillaa et al., 'The Prestige Oil Spill in Cantabria (Bay of Biscay)', 23 (4) *Journal of Coastal Research* 978 (2007).

³⁸³ ITOPE, 'Hebei Spirit, Republic of Korea', 2007 (7 December 2007), available at www.itopf.com/in-action/case-studies/case-study/hebei-spirit-republic-of-korea-2007. See also International Oil Pollution Compensation Funds, *Annual Report 2008*, 125–32.

Accordingly, in May 2003, a Protocol to the 1992 Fund Convention (Supplementary Fund Protocol) was adopted which provides a third tier of compensation by establishing an International Oil Pollution Compensation Supplementary Fund (Supplementary Fund).³⁸⁴ Membership of the Supplementary Fund is optional and is open to any state that is a member of the 1992 Fund.³⁸⁵ The maximum amount payable for any one incident is 750 million SDRs, including the amount payable under the 1992 Conventions. The Supplementary Fund Protocol entered into force on 3 March 2005 and applies to incidents occurring on or after that date.

IOPC Fund Practice

The IOPC Fund has received numerous claims for environmental damage, and its practice may prove instructive to the international community as it seeks to define environmental damage in other contexts. It will be recalled that the Fund pays compensation for pollution damage, which means 'loss or damage caused outside the ship by contamination resulting from the escape or discharge of oil from the ship'. The first claim to the Fund, arising out of the grounding of the Soviet-registered *Antonio Gramsci* off Ventspils, in the former Soviet Union, on 27 February 1979, raised the question of whether the equivalent definition in the previous 1971 Convention included environmental damage or damage to natural resources, as claimed by the Soviet Union and others. The Fund Assembly in Resolution No. 3, adopted in 1980, determined that 'the assessment of compensation to be paid by the IOPC Fund is not to be made on the basis of an abstract quantification of damage calculated in accordance with theoretical models'.³⁸⁶ Accordingly, in the case of environmental damage (other than loss of profit from impairment of the environment), compensation is restricted to costs actually incurred or to be incurred for reasonable measures to reinstate the contaminated environment.

The Patmos Claim

In 1985, on the basis of Resolution No. 3, the IOPC Fund addressed a £9.2 million claim (later reduced to £2.3 million) by the Italian government for damage to the marine environment arising out of a spillage from the *Patmos*, a Greek-registered tanker, off the coast of Calabria on 21 March 1985. In the absence of any documentation from the Italian government indicating the nature of the damage that had been caused or the basis on which the amount claimed had been calculated, the IOPC Fund rejected the claim.³⁸⁷ The Italian government took the case to the Italian courts, and in 1986 the Court of First Instance rejected the government's claim for compensation for ecological damage to marine flora and fauna on the grounds that the territorial sea was not crown or patrimonial property of the state but a *res communis omnium* which could not be violated by private parties, and that, even if it was, the state had not incurred any direct or indirect loss as a result of the oil spill since no disbursements for the cleaning of the coastline had been incurred nor had any loss of profit occurred.³⁸⁸ In 1989, the Court of Appeal overruled the

³⁸⁴ Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, London, 16 May 2003, in force 3 March 2005, 92FUND/A.8/4, Annex I.

³⁸⁵ Currently, thirty-one states are members of the Supplementary Fund.

³⁸⁶ 10 October 1980, FUND/A/ES 1/13, para. 11(a) and Annex (1980). An Intersessional Working Group used similar language in finding that compensation could only be granted if a claimant had suffered economic loss.

³⁸⁷ FUND/EXC.16/8, 22 October 1986, para. 3.3.

³⁸⁸ Joined Cases No. 676/86 and No. 337 and others, *General Nation Maritime Transport Company and Others v. Patmos Shipping Company and Others*, Court of Messina, 1st Civil Section, 30 July 1986, unofficial translation (on file with the authors), 27, 28.

decision, interpreting the Convention to include as environmental damage 'everything which alters, causes deterioration in or destroys the environment in whole or in part'.³⁸⁹ The Court of Appeal interpreted the terms of the then 1969 CLC by reference to the 1969 Intervention Convention, which defines the threat to 'related interests' justifying intervention as including 'the conservation of living marine resources and of wildlife'.³⁹⁰ The Court of Appeal went on to hold that:

the environment must be considered as a unitary asset, separate from those of which the environment is composed (territory, territorial waters, beaches, fish etc.) and it includes natural resources, health and landscape. The right to the environment belongs to the state, in its capacity as representative of the collectivities. The damage to the environment prejudices immaterial values, which cannot be assessed in monetary terms according to market prices, and consists of the reduced possibility of using the environment. The damage can be compensated on an equitable basis, which may be established by the Court on the grounds of an opinion of experts . . . The definition of 'pollution damage' as laid down in Article 1(6) is wide enough to include damage to the environment of the kind described above.³⁹¹

The Court of Appeal held that the traditional view of property damage was no longer valid, and that the owner of the *Patmos*, the UK Club (an insurers' group) and the IOPC Fund were liable for the environmental damage claimed by the Italian government.³⁹² It appointed three experts to ascertain the existence, if any, of damage to the marine resources resulting from the oil spillage.³⁹³ In their March 1990 report, the experts found that, with the exception of damage to fishing activities that they valued at approximately £465,000, there was a lack of data to evaluate the economic impact on other activities and that a precise assessment of damage to such activities was impossible. The experts also determined that the court was the appropriate body to carry out the evaluation.³⁹⁴ In December 1993, the Court of Appeal awarded a final judgment of £827,000 for environmental damage.³⁹⁵ The court decided that the lack of data and the inability of the experts to determine a precise damage award for environmental harms were not reasons to refuse compensation. It found that the experts were wrong to calculate damages based only on market prices for fish. Because the environment and its natural resources were worth more to the community, the Court of Appeal determined damages according to principles of equity. The decision itself does not make clear exactly how the judge assessed and calculated the environmental damages beyond the £465,000 previously indicated by the panel of experts.³⁹⁶

The Haven Case

Another case before the Fund indicated the differences of interpretation which may be applied to the concept of 'environmental damage'. On 11 April 1991, the *Haven*, a Cypriot-registered

³⁸⁹ Cases 391, 392, 393, 398, 426, 459, 460 and 570/1986, Court of Appeal of Messina, Civil Section, Judgment of 30 March 1989, unofficial translation (on file with the author), 57.

³⁹⁰ *Ibid.*, 58; 1969 Intervention Convention, Art. II(4)(c); see Chapter 11, pp. 501–2.

³⁹¹ Summary of Judgment of the Court of Appeal, Doc. FUND/EXC.30/2, 29 November 1991, para. 4.15.

³⁹² *Ibid.*, 59–60. ³⁹³ See *Annual Report 1991*, 30. ³⁹⁴ *Ibid.*

³⁹⁵ E. Brans, *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment* (The Hague/London: Kluwer, 2001), 329–31.

³⁹⁶ *Ibid.*, 330.

tanker, caught fire and broke apart seven miles from Genoa in Italy and released over 10,000 tonnes of oil, causing damage to the Italian and French coasts and necessitating extensive clean-up operations.³⁹⁷ The Italian government submitted a claim for damage to the marine environment, this time in the provisional amount of 100,000 million Italian lire (£47 million), a figure which the Region of Liguria requested should be doubled.³⁹⁸ One thousand two hundred Italian claimants, the French government, twenty-two French municipalities and two other public bodies also submitted claims. In the subsequent court proceedings at the Court of First Instance in Genoa, the question arose as to whether claims for damage to the marine environment could be pursued against the shipowners outside the Conventions under the relevant Italian law if such damage was not admissible under the then 1969 CLC and the 1971 Fund Convention.³⁹⁹ In his report on this matter, the Director of the Fund concluded that the 1969 and 1971 Conventions were designed to provide compensation to victims of pollution damage, that claims which did not relate to such compensation fell outside the scope of the Conventions, and that claims relating to non-quantifiable elements of damage to the environment were of a punitive nature and beyond the scope of the Convention.⁴⁰⁰ The Director took the view that the drafters of the 1971 Fund Convention could not have intended that the Fund should pay damages of a punitive character calculated on the basis of the seriousness of the fault of the wrongdoer or the profit earned by the wrongdoer, and that the result of including such damage would be unacceptable.⁴⁰¹ On this basis, the Director concluded that such claims could be pursued outside the Conventions on the basis of national law.⁴⁰² In rejecting the Director's analysis during a session of the Executive Committee, the Italian delegation maintained its view that the 1969 and 1971 Conventions did not exclude compensation for environmental damage which was non-quantifiable, that the state had a legal right to compensation for damage to the environment which had irreversible consequences or where the environment could not be reinstated, and that Italian law envisaged the possibility of compensation for damage to the marine environment for quantifiable and non-quantifiable elements.⁴⁰³ The Director's point of view was supported by France, the United Kingdom, Japan and the observer delegation of the International Group of P&I Clubs (shipping, insurance and freight companies).⁴⁰⁴

On 5 April 1996, the Court of First Instance in Genoa ruled that 'pollution damage' in the 1969 CLC and 1971 Fund Conventions had a wide enough meaning to include natural resource and environmental damage.⁴⁰⁵ Because these could not be calculated according to commercial or

³⁹⁷ See *Annual Report 1991*, 59–62. ³⁹⁸ *Ibid.*, 63.

³⁹⁹ *Ibid.*, 68. The relevant Italian legislation relating to the protection of the marine environment was the Act of 31 December 1982 (No. 979), containing provisions for the protection of the sea, and the Act of 8 July 1986 (No. 349), establishing the Ministry of Environment. The issue also raised the question of the relationship under Italian law between the legislation implementing the 1969 and 1971 Conventions (Act No. 506 of 27 May 1978) and this later legislation.

⁴⁰⁰ The study is set out in Doc. FUND/EXC.30/2 and summarised in the *Annual Report 1991*, 68–9. ⁴⁰¹ *Ibid.*

⁴⁰² *Ibid.*

⁴⁰³ See FUND/EXC.30/5, paras. 3.1.5 to 3.1.7. Art. 1226 of the Italian Civil Code allowed for the possibility that the amount of damage could be determined in an equitable manner if it was not possible to achieve a precise quantification; see also the text of the Italian statement in Doc. FUND/EXC.30/WP.1, 16 December 1991.

⁴⁰⁴ See FUND/EXC.30/5, paras. 31.1.13–31.1.18.

⁴⁰⁵ Brans, *Liability for Damage to Public Natural Resources*, 334. The court dismissed claims by provinces and municipalities because no economic loss was suffered (*ibid.*). The IOPC Funds suggest that the judge meant that only Italy had standing to bring environmental claims. See IOPC Funds, *Annual Report 1999*, Section 10.2, Incidents Dealt with by the 1971 Fund During 1999, available at www.iopcfund.org/99AR_English.htm

economic valuations, the court awarded £13 million (40,000 million lire), about one-third of the clean-up cost, on the basis that the clean-up did not repair all the damage caused; the award essentially compensated the unremedied residual damage.⁴⁰⁶ The IOPC Fund appealed, and in response Italy requested that the environmental damages be increased to £284 million (883,435 million lire). On 4 March 1999, the parties (Italy, the shipowner, the UK Mutual Steam Ship Assurance Association and the IOPC Fund) withdrew all legal action from Italian courts and signed an agreement.⁴⁰⁷ The shipowner and the UK club made an *ex gratia* payment of £9.1 million (25,000 million lire), in addition paying the amount indicated by the Court of First Instance to Italy, without admitting liability beyond the shipowner's limits under the 1969 CLC.⁴⁰⁸

The Erika Claim

This case addressed the question of the availability of compensation for pure environmental damage. On 12 December 1999, the Maltese-registered tanker, *Erika*, broke in two in the Bay of Biscay, about 60 nautical miles off the coast of Brittany, France, spilling some 19,800 tonnes of heavy oil and causing damage to around 400 kilometres of shoreline.⁴⁰⁹ In excess of 7,000 claims for compensation were submitted in respect of the incident for a total of €388.9 million. Payments of compensation were made in respect of 5,939 claims for a total of €129.7 million, out of which Steamship Mutual, the shipowner's insurer, paid €12.8 million and the 1992 Fund paid €116.9 million. Some 1,016 claims, totalling €31.8 million, were rejected.⁴¹⁰

On the basis of a report by an expert appointed by a magistrate in the Tribunal Correctionnel de Paris, criminal charges were brought in that court against the master of the *Erika*, the representative of the registered owner, and various other entities. A number of claimants, including the French government, several local authorities, and environmental associations joined the criminal proceedings as civil parties, claiming compensation totalling €400 million.⁴¹¹ In its judgment, delivered in January 2008, the court held four parties criminally liable for the offence of causing pollution and also jointly and severally liable in civil law for the damage caused by the incident.⁴¹² Claimants in the proceedings were awarded compensation based on national law for economic losses, damage to the image of several regions and municipalities, moral damages and damages to the environment. The court held that the 1992 Conventions did not deprive the civil parties of their right to obtain compensation for their damage in the criminal courts. The court assessed the total damages in the amount of €192.8 million, including €153.9 million for the French state. The court recognised the right to compensation for damage to the environment for a local authority with special powers for the protection, management and conservation of a territory. The judgment also recognised the right of an environmental protection association to claim compensation, not only for the moral damage caused to the collective

⁴⁰⁶ *Ibid.* ⁴⁰⁷ IOPC Funds, *Annual Report 1999*.

⁴⁰⁸ In June 1999, the 1971 Fund paid £26.4 million to Italy, £1.3 million to France and £28,000 to Morocco, as well as indemnifying the UK club for £2.5 million. However, none of the 1971 Fund payments related to environmental damage (*ibid.*).

⁴⁰⁹ International Oil Pollution Compensation Funds, *Incidents Involving the IOPC Funds – 2013*, available at www.iopcfunds.org/uploads/tx_iopcpublications/incidents2013_e.pdf, 6–7.

⁴¹⁰ *Ibid.*, 7.

⁴¹¹ *Ibid.*, 7–8. See also D. Papadopolou, 'The Role of French Environmental Associations in Civil Liability for Environmental Harm: Courtesy of Erika', 21(1) *Journal of Environmental Law* 87 (2009).

⁴¹² Tribunal Correctionnel de Paris, 16 January 2008, 99-34-895010.

interests which it was its purpose to defend, but also for the damage to the environment which affected the collective interests that it had a statutory mission to safeguard.⁴¹³

In an appeal to the Cour d'Appel de Paris, the appellate court, in a judgment delivered in March 2010, confirmed the judgment of the Tribunal Correctionnel de Paris.⁴¹⁴ The Court of Appeal accepted not only material damages (clean-up, restoration measures and property damage) and economic losses, but also accepted moral damage resulting from the pollution, including loss of enjoyment, damage to reputation and brand image, and moral damage arising from damage to the natural heritage. The Court of Appeal's judgment confirmed the compensation rights for moral damage awarded by the Tribunal Correctionnel de Paris to a number of local authorities and, in addition, accepted claims for moral damage from other civil parties. The Court of Appeal also accepted the right to compensation for pure environmental damage, i.e. damage to non-marketable environmental resources that constitute a legitimate collective interest. The Court of Appeal considered that it was sufficient that the pollution touched the territory of a local authority for these authorities to be able to claim for the direct or indirect damage caused to them by the pollution. It awarded compensation for pure environmental damage in the amount of €203.8 million to local authorities and environmental associations. Some fifty parties, including the ship owner, appealed the decision to the Cour de cassation (Court of Cassation).

The Criminal Section of the Court of Cassation delivered its judgment in September 2012.⁴¹⁵ It confirmed the lower courts' findings of criminal liability and the compensation amounts for material, moral and pure environmental damage awarded by the Court of Appeal.

At its July session in 2011, the 1992 Fund Executive Committee authorised the Director to reach a global settlement in respect of the *Erika* incident, with the objective of ensuring that civil parties awarded compensation by the Court of Appeal judgment received compensation as soon as possible. The incident was finally closed in October 2015.⁴¹⁶

Other Claims

Currently the 1992 Fund is dealing with claims in respect of twelve 'open' incidents.⁴¹⁷ These include civil and criminal proceedings in the Spanish courts regarding the *Prestige* incident,⁴¹⁸ and actions in Korean courts regarding the *Hebei Spirit* incident.⁴¹⁹

2001 Bunker Oil Convention

In 2001, the IMO adopted the International Convention on Civil Liability for Bunker Oil Pollution Damage, filling a lacuna left by previous oil pollution conventions, which did not cover liability for fuel spills from ships' bunkers, except for tankers.⁴²⁰ The 2001 Convention is largely based on the 1992 CLC, which makes shipowners strictly liable for fuel spills,⁴²¹ but also allows states to limit liability in accordance with national or international regimes, such as the amended 1976 Convention on Limitation of Liability for Maritime Claims.⁴²² Article 7 of the

⁴¹³ Papadopolou, 'Role of French Environmental Associations'.

⁴¹⁴ See IOPC, *Incidents Involving the IOPC Funds – 2013*, 8–9. ⁴¹⁵ *Ibid.*, 9–10

⁴¹⁶ IOPC, *Incidents – Erika* incident, available at www.iopcfunds.org/incidents/incident-map/#111-12-December-1999

⁴¹⁷ IOPC, *Incidents*, www.iopcfunds.org/incidents/incident-map ⁴¹⁸ See n. 383.

⁴¹⁹ For details see IOPC, *Incidents – Hebei Spirit* incident, available at www.iopcfunds.org/incidents/incident-map/#140-07-December-2007

⁴²⁰ London, 23 March 2001, in force 21 November 2008. ⁴²¹ 2001 Bunker Oil Convention, Art. 3. ⁴²² Art. 6.

2001 Convention requires owners of ships registered in states parties to maintain insurance or other financial security equal to the limitation provided in Article 6. The 2001 Convention relies on the same approach to environmental damage as the 1992 CLC, limiting compensation for environmental damage to 'reasonable measures of reinstatement'.⁴²³

Private Compensation Schemes

In addition to these international treaty arrangements, shipowners and oil companies have entered into private agreements establishing compensation schemes. The original schemes were the 1969 Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution (TOVALOP),⁴²⁴ the 1971 Contract Regarding a Supplement to Tanker Liability for Oil Pollution (CRISTAL)⁴²⁵ and the 1974 Oil Companies Offshore Pollution Liability Agreement (OPOL).⁴²⁶ TOVALOP and CRISTAL were wound up in 1997, as a result of greater acceptance by states of the IMO civil liability regimes.⁴²⁷ OPOL is a voluntary agreement that came into effect on 1 May 1975, and originally applied only to offshore oil pollution incidents within the jurisdiction of the UK. All offshore oil operators working on the UK continental shelf are a party to OPOL.⁴²⁸ However, OPOL has been extended to offshore facilities within the jurisdictions of Denmark, the Federal Republic of Germany, France, the Republic of Ireland, the Netherlands, Norway, the Isle of Man, the Faroe Islands and Greenland, but excluding those offshore facilities located in the Baltic and Mediterranean Seas. It may also be extended so as to apply to offshore facilities within the jurisdiction of any other state. The Agreement provides for a voluntary regime of strict liability, with limitations to liability, for pollution caused by offshore facilities engaging in oil exploration or production from the seabed and its subsoil. As of January 2016, OPOL requires its operators to accept strict liability for up to \$250 million USD per pollution incident and \$500 million USD in the annual aggregate for the member group companies.

Two additional voluntary funds were set up in 2006 to indemnify the 1992 Fund Convention and 2003 Supplementary Fund Protocol respectively for compensation paid above a shipowner's limit of liability under the 1992 CLC.⁴²⁹ The Small Tanker Oil Pollution Indemnification Agreement 2006 (STOPIA) is a voluntary agreement between owners of small tankers (less than 29,548 gigatonnes) and their insurers. Under STOPIA, the liability of owners of small tankers is increased to 20 million SDRs. It applies to incidents involving participating tankers in all 1992 Fund Convention member states. A second agreement, known as the Tanker Oil Pollution Indemnification Agreement (TOPIA) applies to all tankers entered in protection and indemnity insurance (P&I) clubs that are members of the International Group of P&I clubs reinsured through the pooling arrangements of the Group. TOPIA indemnifies the Supplementary Fund for 50 per cent of the amounts paid in compensation by that Fund in respect of incidents involving covered tankers.

⁴²³ Art. 1(9)(a).

⁴²⁴ 7 January 1969, in force 6 October 1969, 8 ILM 497 (1969), as amended. In 1990, 97 per cent of the world's tanker tonnage was covered by TOVALOP (*TOVALOP (The International Tanker Owners Pollution Federation Ltd and CRISTAL Ltd)* (1990, 2nd edn), 1.

⁴²⁵ 14 January 1971 (as amended), 10 ILM 137 (1971).

⁴²⁶ 4 September 1974, 13 ILM 1409 (1974); see also Rules of OPOL, 2 October 1974, 14 ILM 147 (1975).

⁴²⁷ See www.itopf.com/about/history; and the first edition of this book at pp. 665–6.

⁴²⁸ Offshore Pollution Liability Association Ltd, OPOL Agreement, available at www.opol.org.uk/agreement.htm. The OPOL Agreement has been amended numerous times, most recently on 1 December 2015.

⁴²⁹ Agreements reproduced in IOPC Funds Assembly, SUPPFUND/A/ES.2/7, 1 February 2006.

Marine Environment

Apart from the various marine environment conventions that encourage the development of liability and compensation rules,⁴³⁰ two civil liability conventions have been adopted. The 1977 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources,⁴³¹ which has not entered into force, provides for the liability of the operator of an installation under the jurisdiction of a party for pollution damage resulting from an incident occurring beyond the coastal low-water line.⁴³² Only states with coastlines on the North Sea, the Baltic Sea or northern parts of the Atlantic may become parties.⁴³³ The pollution damage must be suffered in the territory of a party, including the internal waters and territorial sea, or in areas in which the party has sovereign rights over natural resources under international law, as well as in respect of preventive measures wherever taken.⁴³⁴ The definition of 'pollution damage' as 'loss or damage outside the installation caused by contamination resulting from the escape or discharge of oil from the installation' is sufficiently broad to include environmental damage.⁴³⁵ The Convention provides for strict liability, joint and several liability, the extinction of other claims against the operator for pollution damage, an entitlement to limit liability, an insurance requirement, and recognition and enforcement of judgments.⁴³⁶ Liability may not be limited if it is proved that the damage occurred 'as a result of an act or omission by the operator himself, done deliberately with actual knowledge that pollution damage would result',⁴³⁷ and there will be no liability in respect of abandoned wells where the damage occurred more than five years after abandonment 'under the authority and in accordance with the requirements' of the controlling party.⁴³⁸ Actions under the Convention are subject to an overall limitation period of four years.⁴³⁹ By limiting actions to the courts of any party where the damage was suffered or in respect of an area in which 'in accordance with international law, a state has sovereign rights over natural resources', or the courts of the controlling party, the Convention appears to exclude the possibility of environmental claims concerning damage in areas beyond national jurisdiction.⁴⁴⁰

The 1992 Black Sea Convention requires each party to adopt rules and regulations on liability for damage caused by natural or juridical persons to the marine environment of the Black Sea, and to ensure that recourse is available for 'prompt and adequate' compensation or other relief for damage caused by pollution of the marine environment.⁴⁴¹ The object of the rules is to ensure the 'highest degree of deterrence and protection for the Black Sea as a whole', and to that end the parties are committed to cooperating on the development and harmonisation of their laws and procedures relating to liability, assessment and compensation for damage.⁴⁴²

Waste

Liability for damage caused by waste has been an international legal issue since Article X of the 1972 London Convention committed parties to 'develop procedures for the assessment of

⁴³⁰ See n. 8.

⁴³¹ London, 1 May 1977, not yet in force, 16 ILM 1450 (1977); W. N. Hancock and R. M. Stone, 'Liability for Transnational Pollution Caused by Offshore Oil Rig Blowouts', 5 *Hastings International and Comparative Law Review* 377 (1982).

⁴³² Arts. 2(a) and 3(a). Art. 1(2) defines 'installation'. ⁴³³ Art. 18. ⁴³⁴ Art. 2(b). ⁴³⁵ Art. 1(6).

⁴³⁶ Arts. 3-8 and 12. ⁴³⁷ Art. 6(4). ⁴³⁸ Art. 3(4). ⁴³⁹ Art. 10. ⁴⁴⁰ Art. 11(1).

⁴⁴¹ Art. XVI(2) and (3), Chapter 11, pp. 465ff. ⁴⁴² Art. XVI(4).

liability' regarding dumping, in accordance with the principles of international law regarding state responsibility for environmental damage.⁴⁴³ The 1991 Bamako Convention requires each party to impose strict and unlimited liability, as well as joint and several liability, on hazardous waste generators, as well as committing the parties to develop a Protocol on liability and compensation.⁴⁴⁴

In 1999, pursuant to Article 12 of the 1989 Basel Convention, parties adopted the Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal.⁴⁴⁵ The Protocol, which is yet to enter into force, includes numerous innovative provisions. It is intended to provide a comprehensive regime for liability and for adequate and prompt compensation for damage, defined to include damage to persons and property and loss of income deriving from an economic interest in the environment, costs of measures reinstating the impaired environment, and preventive measures.⁴⁴⁶ The Protocol expressly requires any person who is in operational control of the waste to take all reasonable measures to mitigate damage arising from an incident.⁴⁴⁷

The Protocol applies to damage due to an incident occurring during a transboundary movement, including illegal traffic and in respect of reimport, 'from the point where the wastes are loaded on the means of transport in an area under the national jurisdiction of the state of export'.⁴⁴⁸ Its application is subject to certain other exclusions.⁴⁴⁹ It covers all damage suffered in an area under the national jurisdiction of a party, but only damage to persons and property and preventive measures in areas beyond national jurisdiction, and provides particular rules where the state of import, but not the state of export, is a party to the Protocol.⁴⁵⁰

The Protocol provides generally for strict liability, with fault liability where there is a failure to comply with the Convention or damage occurs because of intentional, reckless or negligent acts or omissions.⁴⁵¹ The Protocol does not affect the rights and obligations of parties under general international law.⁴⁵² Under a regime of strict liability, the notifying entity is generally liable for damage until the disposer takes possession of the waste, at which point liability shifts to the disposer,⁴⁵³ with a special rule governing hazardous waste within the meaning of Article 1(1)(b) of the Convention (wastes determined to be hazardous by a party but not included in Annex I to the Convention).⁴⁵⁴ Liability is excluded upon proof of damage arising as a result of certain acts, including armed conflict and insurrection, certain natural phenomena, and the wrongful conduct of a third party.⁴⁵⁵

⁴⁴³ See now Art. 15 of the 1996 London Protocol, committing parties to 'undertake to develop procedures regarding liability'.

⁴⁴⁴ Art. 4(3)(b), see Chapter 12, pp. 620–3.

⁴⁴⁵ 1999 Basel Liability Protocol, 10 Dec. 1999, UN Doc. UNEP/CHW.1/WG/1/9/2, not in force; S. Choksi, 'The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal: 1999 Protocol on Liability and Compensation', 28 *Ecology Law Quarterly* 509 (2001).

⁴⁴⁶ Arts. 1 and 2(2)(c). 'Measures of reinstatement' and 'preventive measures' are defined at Art. 2(2)(d) and (e).

⁴⁴⁷ Art. 6.

⁴⁴⁸ Art. 3(1) and (4). A party may notify the exclusion of the application of the Protocol, where it is the state of export, for incidents occurring within an area under its national jurisdiction, as regards damage in such area (*ibid.*). The Protocol further defines its scope of application in relation to particular activities (Art. 3(2)).

⁴⁴⁹ Art. 3(6)(a) and (b), (7) and (8).

⁴⁵⁰ Art. 3(3)(a), (b) and (c). Special provision is made for damage to states of transit (Art. 3(3)(d) and Annex A).

⁴⁵¹ Art. 5. ⁴⁵² Art. 16. ⁴⁵³ Art. 4(1). ⁴⁵⁴ Art. 4(2). ⁴⁵⁵ Art. 4(5).

Liability is limited for non-fault-based incidents to amounts determined by domestic law,⁴⁵⁶ but there are no liability limits for damage from fault-based incidents.⁴⁵⁷ The Protocol sets minimum liability for damage,⁴⁵⁸ and liable persons must also have insurance or financial guarantees covering these amounts.⁴⁵⁹ Claims may be brought in the courts of the party where the damage was suffered, or where the incident occurred, or where the defendant has his habitual residence or principal place of business, and provision is made for the mutual recognition and enforcement of judgments.⁴⁶⁰ Matters not regulated by the Protocol are governed by the law of the competent court.⁴⁶¹ Claims under the Protocol are inadmissible unless brought within ten years of the incident and within five years from the date when the claimant knew or ought reasonably to have known of the damage.⁴⁶²

Transport

Transport issues are addressed by two instruments: the Geneva Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (1989 CRTD),⁴⁶³ and the 2010 Protocol to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (2010 HNS Protocol).⁴⁶⁴ Neither instrument is in force.

The 1989 CRTD was adopted under the auspices of the United Nations Economic Commission for Europe (UNECE), and provides for the liability of the carrier (the registered owner or person controlling the road vehicle or inland navigation vessel or operator of a railway line) for damage caused during the transport of dangerous goods.⁴⁶⁵ Compensable damage includes loss of life or personal injury, loss of or damage to property, and:

loss or damage by contamination to the environment caused by dangerous goods, provided that compensation for impairment of the environment other than for loss of profit caused from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken.⁴⁶⁶

⁴⁵⁶ Art. 12(1) and Annex B(1). Annex B(2)(b) does not allow the maximum liability for disposers to be less than 2 million units of account for any incident.

⁴⁵⁷ Art. 12(2).

⁴⁵⁸ Annex B(2)(a) (1 million SDRs for shipments of less than 5 tonnes; 2 million SDRs for shipments of 5–25 tonnes; 4 million SDRs for shipments of 25–50 tonnes; 6 million SDRs for shipments of 50–1,000 tonnes; 10 million SDRs for 1,000–10,000 tonnes; and 1,000 SDRs for each additional tonne beyond 10,000 up to a maximum of 30 million SDRs).

⁴⁵⁹ Art. 14. ⁴⁶⁰ Arts. 17 and 21. ⁴⁶¹ Art. 19. ⁴⁶² Art. 13.

⁴⁶³ 10 October 1989, not yet in force, ECE/TRANS/79.

⁴⁶⁴ 2010 HNS Protocol, available at www.hnsconvention.org/the-convention. This treaty is intended to replace the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (1996 HNS Convention), London, 3 May 1996, 35 ILM 1404 (1996), which did not attract sufficient ratifications to enter into force.

⁴⁶⁵ Art. 5.

⁴⁶⁶ Art. 1(10)(c). 'Damage' also includes the cost of preventive measures, defined as 'any reasonable measures taken by any person after an incident has occurred to prevent or minimise damage' (Art. 1(10)(d) and (11)).

The carrier may limit its liability in case of rail or road transport to 18 million SDRs for claims covering loss of life or personal injury and to 12 million SDRs for other claims, and in the case of inland navigation vessels to 8 million SDRs and 7 million SDRs respectively.⁴⁶⁷ Under the CRTD, a victim has a choice of courts in which to bring actions: the courts of the party in which the accident occurred, or the damage or loss occurred, or where preventive measures were taken, or where the carrier has its habitual residence.⁴⁶⁸

The 2010 HNS Protocol was adopted in April 2010 as a successor to the 1996 HNS Convention, which had failed to receive sufficient ratifications to enter into force. The 1996 HNS Convention, adopted under the auspices of the IMO, provides for a two-tiered system of liability and compensation similar to the 1992 CLC and 1992 Fund Convention, and uses the same definitions as the 1989 CRTD to determine compensable damage, including environmental damage.⁴⁶⁹ The approach of the 1996 HNS Convention follows the 1992 CLC. Chapter II establishes a regime of strict liability for shipowners and a list of defences to liability, rules for joint and several liability for damage that is not reasonably separable by shipowner, and compulsory shipowner's insurance.⁴⁷⁰ Article 9(1) limits the shipowner's liability to specified amounts;⁴⁷¹ Article 9(2), however, imposes no limit to liability if the shipowner intended to cause damage or acted recklessly with knowledge that damage would result. Chapter III establishes the HNS Fund which, like the 1992 Fund Convention for oil pollution, will compensate any person who suffers damage under Chapter II but is unable to obtain compensation because the shipowner is not liable, the shipowner is incapable of meeting all its financial obligations, or the damages exceed the shipowner's liability under Chapter II.⁴⁷²

By 2009, the 1996 HNS Convention had only been ratified by fourteen states and was considered unlikely to enter into force given the objection of a number of states to several of its provisions. These included the requirement for states to report to IMO the quantities of HNS substances that had been received,⁴⁷³ which was considered problematic in respect of packaged HNS goods. In response, the 2010 HNS Protocol removes the obligation for receivers of packaged goods to contribute to the HNS Fund, although maintaining packaged goods within the scope of the HNS regime so that compensation for incidents involving packaged HNS will continue to be covered.⁴⁷⁴ Under the 2010 Protocol, if damage is caused by bulk HNS, compensation is first sought from the shipowner up to a maximum limit of 100 million SDRs. Where damage is caused by packaged HNS, or by both bulk HNS and packaged HNS, the maximum shipowner's liability is 115 million SDRs. If this limit is reached, additional compensation is paid from the second tier – the HNS Fund – up to a maximum of 250 million SDRs, including compensation paid under the first tier.⁴⁷⁵ The 2010 HNS Protocol will enter into force eighteen months after the date on which it is ratified by at least twelve states, including four states each with not less than 2 million units

⁴⁶⁷ Art. 9. ⁴⁶⁸ Art. 19. ⁴⁶⁹ 1996 HNS Convention, Art. 1(6)(a)–(d); 1989 CRTD, Art. 1(10)(a)–(d).

⁴⁷⁰ Arts. 7, 8 and 12.

⁴⁷¹ The limitations for any one incident are: 10 million SDRs for ships under 2,000 units of tonnage; an additional 1,500 SDRs for each unit of tonnage between 2,001 and 50,000; and an additional 360 SDRs for every unit of tonnage over 50,000, provided that the total limit on liability does not exceed 100 million SDRs.

⁴⁷² Art. 14(1). ⁴⁷³ HNS Convention, Art. 21.

⁴⁷⁴ 2010 HNS Protocol, Art. 3(3) and (1); amending HNS Convention, Art. 1(10) and (5)(a)(iv) and (vii). Art. 3(3) of the HNS Protocol amends Art. 1(10) of the Convention so that packaged goods are excluded from the definition of contributing cargo, which has the effect of exempting receivers of the goods from the obligation to contribute to the HNS Fund.

⁴⁷⁵ HNS Protocol, Art. 7.

of gross tonnage, and having received during the preceding calendar year a total quantity of at least 40 million tonnes of cargo that would be contributing to the general account.⁴⁷⁶

Antarctic

1988 CRAMRA

The 1988 CRAMRA was the first Antarctic treaty to address liability, although it is unlikely ever to enter into force.⁴⁷⁷ Of particular note are the provisions concerning liability for environmental damage, and the relationship between the liability of the operator and the operator's sponsoring state. Under Article 8, the operator is under an obligation to take necessary and timely response action if its activities result in, or threaten, damage to the Antarctic environment or its dependent or associated ecosystems. Such action includes prevention, containment, clean-up and removal measures.⁴⁷⁸ The operator will be strictly liable for: damage to the Antarctic environment or dependent or associated ecosystems (including payment in the event that there has been no restoration to the status quo ante); loss of or impairment to established use; loss of or damage to people and property; and reimbursement of reasonable costs relating to necessary response action to restore the status quo ante (including prevention, containment, clean-up and removal).⁴⁷⁹ Environmental liability is widely defined.⁴⁸⁰

Where the damage would not have occurred if the sponsoring state had carried out its obligation under the Convention, that state will be liable for the part which remains unsatisfied by the operator.⁴⁸¹ This innovative approach links civil and state liability in a unique way. CRAMRA would allow limited defences to liability,⁴⁸² and provides for the elaboration of further rules and procedures on liability in a supplementary Protocol.⁴⁸³ Guidance is provided on the content of those rules and procedures, which are to be designed to enhance the protection of the Antarctic and discourage commercial activity. The rules and procedures could include provisions for appropriate limits on liability where they can be justified, means and mechanisms to assess and adjudicate claims, and means to provide immediate assistance for response action including where the operator is financially incapable of meeting its obligation in full or there is a defence to liability.⁴⁸⁴

1991 Antarctic Environment Protocol

The 1991 Antarctic Environment Protocol dispensed with CRAMRA's substantive liability rules, and committed the parties to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic and covered by the Protocol.⁴⁸⁵ These rules

⁴⁷⁶ *Ibid.*, Art. 21. ⁴⁷⁷ See Chapter 13, pp. 637–9. ⁴⁷⁸ Art. 8(1). ⁴⁷⁹ Art. 8(2).

⁴⁸⁰ Art. 1(15). This definition appears to be the first in an international treaty that does not set the threshold for damage to be compensable at a level which is 'significant' or 'substantial'.

⁴⁸¹ Art. 8(3).

⁴⁸² Art. 8(4) and (6) (including unforeseeable natural disaster; armed conflict or act of terrorism against which precautionary measures would not have been effective; and contributory negligence).

⁴⁸³ Art. 8(7). ⁴⁸⁴ Art. 8(7)(c).

⁴⁸⁵ Art. 16, see Chapter 13, pp. 639–44. The Final Act of the Eleventh Antarctic Treaty Special Consultative Meeting, which adopted the Protocol, underlined the commitment of the parties to develop at an early stage rules on liability, and their understanding that liability for damage to the Antarctic environment should be included in the rules. In June 2005, the parties agreed a new Annex VI containing rules on liability arising from environmental emergencies, discussed below.

were to be consistent with the objectives of the Protocol for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems. In 1998, the group of legal experts, convened under Article 16 of the 1991 Protocol, presented their final report to the twenty-second Antarctic Treaty Consultative Meeting (ATCM). Members of the ATCM were unable to reach a consensus on the key issues contained in the group's report, including whether to adopt a comprehensive liability annex or a set of specific liability annexes, whether to compensate irreparable environmental damage, whether to establish an environmental protection fund, and whether to exclude environmental damages resulting from activities found to be acceptable by national authorities after environmental impact assessments.⁴⁸⁶ The ATCM member states decided to dissolve the group of legal experts and shift the responsibility for developing an Antarctic liability regime to its Working Group I.⁴⁸⁷ At the twenty-eighth ATCM in 2005, the Group finalised a restricted liability regime in a new Annex VI, which was adopted by the state representatives at the meeting.⁴⁸⁸

Annex VI provides a liability regime limited in scope to environmental emergencies in the Antarctic Treaty area which relate to scientific research programmes, tourism (including tourist vessels) and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities.⁴⁸⁹ In this sense, the liability Annex is more a specific elaboration of Article 15 of the Protocol than a comprehensive liability regime as envisaged by Article 16.⁴⁹⁰ An 'environmental emergency' is defined as any accidental event that occurs after the entry into force of Annex VI and results in, or imminently threatens to result in, any significant and harmful impact on the Antarctic environment.⁴⁹¹ Each party must require its operators (including state-funded research agencies) to undertake reasonable preventative measures that are designed to reduce the risk of environmental emergencies and their potential adverse impact,⁴⁹² and to establish contingency plans to respond to such incidents.⁴⁹³ In the event of an environmental emergency arising from the activities of one of its authorised operators, a state party must require the operator to take 'prompt and effective response action'.⁴⁹⁴ Such action consists of 'reasonable measures' in the wake of an environmental emergency taken to avoid, minimise or contain the impact of the emergency, including clean-up in appropriate circumstances, and determining the extent of the emergency and its impact.⁴⁹⁵

⁴⁸⁶ R. Lefeber, 'General Developments: International/Civil Liability and Compensation', 9 *Yearbook of International Environmental Law* 158 at 164 (1998).

⁴⁸⁷ *Ibid.*

⁴⁸⁸ Final Report of the Twenty-Eighth Antarctic Treaty Consultative Meeting, Stockholm, 6–17 June 2005, 61. The rules form Annex VI to the Protocol and are not yet in force.

⁴⁸⁹ Annex VI, Art. 1. Environmental emergencies caused by a party's warships, naval auxiliaries, or other ships or aircraft owned or operated by the party and used, for the time being, only on government non-commercial service, are also covered.

⁴⁹⁰ Wolfrum, 'Liability for Environmental Damage in Antarctica', 818.

⁴⁹¹ Art. 2(b). As Wolfrum notes, the limitation of damage to the 'Antarctic environment' gives the Liability Annex a narrower scope of operation than the CRAMRA which also extended to damage to associated and dependent ecosystems (*ibid.*).

⁴⁹² Art. 3(1). ⁴⁹³ Art. 4. ⁴⁹⁴ Art. 5(1).

⁴⁹⁵ Art. 2(f). 'Reasonable' as applied to preventative measures and response action, is defined to mean 'measures or actions which are appropriate, practicable, proportionate and based on the availability of objective criteria and information, including: (i) risks to the Antarctic environment, and the rate of its natural recovery; (ii) risks to human life and safety; and (iii) technological and economic feasibility' (Art. 2(e)).

If the operator does not take prompt and effective response action, the state party of that operator (in the first instance) and other parties (with notification to the first state and the Antarctic Treaty Secretariat)⁴⁹⁶ are 'encouraged' to take such action 'including through their agents and operators specifically authorised by them to take such action on their behalf'.⁴⁹⁷ Other states parties should not take response action, however, 'unless a threat of significant and harmful impact to the Antarctic environment is imminent and it would be reasonable in all the circumstances to take immediate response action, or the Party of the operator has failed within a reasonable time to notify the Secretariat of the Antarctic Treaty that it will take the response action itself, or where that response action has not been taken within a reasonable time after such notification'.⁴⁹⁸

The standard of liability on operators is strict,⁴⁹⁹ and there is provision for joint and several liability in the case where an environmental emergency results from the activities of two or more operators,⁵⁰⁰ as well as a requirement for the maintenance of adequate insurance or financial security.⁵⁰¹ Exemptions from liability are specified, including for an environmental emergency resulting from response action taken or authorised by a state to the extent that such response action was reasonable in all the circumstances.⁵⁰² Limits on operator liability are also established:⁵⁰³ 3 million SDRs for an environmental emergency arising from an event which does not involve a ship, and different maxima for incidents involving ships depending on the tonnage involved.⁵⁰⁴

Operators that fail to take prompt and effective response action to environmental emergencies arising from their activities are liable to pay the costs of response action taken by states parties.⁵⁰⁵ Importantly, this provision applies to both state operators and non-state operators, although a distinction is drawn between state and non-state operators when it comes to the amount of compensation payable. In cases where a non-state operator should have taken prompt and effective response action but did not, and no response action was taken by any party, the non-state operator is liable to pay 'an amount of money that reflects as much as possible the costs of the response action that should have been taken'.⁵⁰⁶ Recovery of costs by a state from a non-state operator is to be by recourse to the courts in one of the parties in which the operator is incorporated, or has its principal place of business or residence. Compensation actions must be brought within three years of the commencement of the response action or within three years of the date on which the party bringing the action knew or ought reasonably to have known the

⁴⁹⁶ Such notification is generally required prior to taking response action except in circumstances where threat of significant and harmful impact to the Antarctic environment is imminent and it would be reasonable in all the circumstances to take immediate response action (Art. 5(3)(a)).

⁴⁹⁷ Art. 5(2). Wolfrum notes that this provision may unintentionally make states responsible for the consequences of activities carried out by operators they authorise to act on their behalf ('Liability for Environmental Damage in Antarctica', 824).

⁴⁹⁸ Art. 5(3)(b).

⁴⁹⁹ Art. 6(3). This money is to be paid directly to a fund set up under Art. 12, to the party of that operator or to the party that seeks reimbursement of costs pursuant to domestic law mechanisms under Art. 7(3). A party receiving such money shall make best efforts to make a contribution to the fund referred to in Art. 12 which at least equals the money received from the operator.

⁵⁰⁰ Art. 6(4). However, it is open to the operator to refute the operation of this provision by establishing that only part of the environmental emergency results from its activities.

⁵⁰¹ Art. 11. ⁵⁰² Art. 8(2).

⁵⁰³ Such limits do not apply in the case of reckless or intentional acts by the operator (Art. 9(3)). ⁵⁰⁴ Art. 9(1).

⁵⁰⁵ Art. 6(1). ⁵⁰⁶ Art. 6(2)(b).

identity of the operator, whichever is later, but in no case more than fifteen years after the commencement of the response action.⁵⁰⁷

In respect of state operators, they are subject to the same obligations as non-state operators to take prompt and effective response action in the event of an environmental emergency. When a state operator should have taken such action, but fails to do so, and no response action was taken by any other party, the state operator is liable to pay the whole sum of the cost of the response action that should have been undertaken into a special fund established by Article 12. This amount is to be determined by a consensus decision of the ATCM.⁵⁰⁸ The liability of a state operator can also only be resolved by the ATCM, and, if no resolution can be reached in that forum, then in accordance with any enquiry procedure which may be established by the parties, the provisions of Articles 18, 19 and 20 of the Environmental Protocol and, as applicable, the Schedule to the Protocol on Arbitration.⁵⁰⁹

Biodiversity

The 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol (Nagoya–Kuala Lumpur Liability Protocol) is the most recent international instrument to be concluded in the field of civil liability.⁵¹⁰ Negotiations to establish a supplementary liability regime under the Biosafety Protocol posed particular challenges in light of the potential for cumulative and diffuse impacts, time lags in the manifestation of harm and the issue of defining what constitutes damage.⁵¹¹ Unlike damage from oil pollution, or even radioactive substances, environmental damage that might be caused by genetically modified, living organisms to biodiversity or human health is much more difficult to detect, let alone quantify and value. These difficulties were reflected in the lengthy negotiating process, which commenced under the authority of Article 27 of the Biosafety Protocol in 2004 with the aim of adopting ‘a process with respect to the appropriate elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms’ (LMOs).⁵¹² Given its substantial period of gestation, the Nagoya–Kuala Lumpur Liability Protocol, adopted in October 2010 at the fifth Meeting of the Parties in Nagoya, Japan, is a rather disappointing result. The Protocol is less a far-reaching set of legally binding international rules on liability for damage from modified organisms than ‘a text allowing Parties to address LMO damage through existing civil liability systems or through newly developed civil liability mechanisms’.⁵¹³ It establishes no internationally agreed substantive rules on liability associated with the transboundary movement of LMOs such as exist under most other civil liability regimes (e.g. requirements for operators to maintain appropriate insurance or financial

⁵⁰⁷ Art. 7(1). Parties must ensure that their courts have the necessary jurisdiction to hear such claims and that enforcement mechanisms exist under their domestic law (Art. 7(2) and (3)).

⁵⁰⁸ Art. 7(5)(b). ⁵⁰⁹ Art. 7(5)(a).

⁵¹⁰ Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, Nagoya, 15 October 2010, not in force, BS VI-11 (four more ratifications are required for the Protocol to enter into force).

⁵¹¹ On the Biosafety Protocol, see Chapter 10, pp. 397–403. See also Brunnée, ‘Of Sense and Sensibility’, 362.

⁵¹² Art. 27 anticipated a four-year time frame for the negotiations.

⁵¹³ A. Telesetsky, ‘The 2010 Nagoya–Kuala Lumpur Supplementary Protocol: A New Treaty Assigning Transboundary Liability and Redress for Biodiversity Damage Caused by Genetically Modified Organisms’, 14(41) *ASIL Insights*, 10 January 2011.

security) due to concerns about the costs this might impose on the use of genetically modified crops. Instead, parties 'will defer to the wisdom and capacity of States operating under their domestic law'.⁵¹⁴

The Preamble to the Protocol references Principle 13 of the Rio Declaration – calling for development of national and international law on liability and redress for environmental damage – and reaffirms the precautionary approach in Principle 15. The objective of the Protocol is declared to be 'to contribute to the conservation and sustainable use of biological diversity, taking also into account risks to human health, by providing international rules and procedures in the field of liability and redress relating to living modified organisms'.⁵¹⁵ The Protocol applies to damage resulting from LMOs that find their origin in a transboundary movement, including LMOs intended for direct use for food, feed or processing,⁵¹⁶ destined for contained use, or intended for intentional introduction into the environment.⁵¹⁷ Importantly the Protocol also extends to damage from unintentional and illegal transboundary movements of LMOs.⁵¹⁸ However, only damage occurring in areas within the limits of the national jurisdictions of parties is covered, thus excluding damage to areas of the global commons.⁵¹⁹

The key concept of 'damage' in the Protocol is defined as 'an adverse effect on the conservation and sustainable use of biological diversity, taking also into account risks to human health' that is (a) measurable or otherwise observable and (b) significant.⁵²⁰ Significance of damage is to be determined on the basis of factors such as the degree of long-term or permanent change, the extent of qualitative or quantitative changes adversely affecting components of biodiversity, any reduction of the ability of biodiversity components to provide goods and services, and the extent of any adverse effects on human health.⁵²¹ The nature of these factors, together with the requirement that damage must be measurable or otherwise observable suggests that the assessment of damage will be primarily based on scientific evidence rather than taking into account other values e.g. community values, indigenous practices, socioeconomic considerations, etc. Liability under the arrangements established by the Protocol will fall on operators, defined to mean any person in direct or indirect control of an LMO and thereby potentially encompassing a range of entities along the chain of custody for LMOs.⁵²² The major innovation introduced by the Protocol is the requirement in Article 5 for states to require operators in the event of damage from LMOs to notify the national competent authority, evaluate the damage and take appropriate response measures.⁵²³ Response measures are limited to 'reasonable actions' to prevent, minimise, contain, mitigate or otherwise avoid damage and to restore biodiversity.⁵²⁴ Restoration efforts are to be undertaken in the first instance with the intention of restoring biodiversity to the status quo ante or its nearest equivalent, but where this is determined not to be possible then restoration may take place by replacing the loss of biodiversity with other components of biodiversity for the same or for another type of use at the same or, as appropriate, at an alternative location. Operators are to be afforded the opportunity to pursue administrative or

⁵¹⁴ *Ibid.* ⁵¹⁵ Art. 1.

⁵¹⁶ A major issue of contention during the negotiations was whether the Protocol would extend to products derived from LMOs such as tofu made from genetically modified soybeans. The final text of the Protocol omits any reference to LMOs and the 'products thereof', though retaining the potential for application to damage from LMOs intended for direct use for processing.

⁵¹⁷ Art. 3(1). ⁵¹⁸ Art. 3(4) and (5). ⁵¹⁹ Art. 3(6). ⁵²⁰ Art. 2(2)(b). ⁵²¹ Art. 2(3). ⁵²² Art. 2(2)(c).

⁵²³ In the event that the operator does not take required response measures, the national competent authority may do so and recover the costs from the operator (Art. 5(4) and (5)).

⁵²⁴ Art. 2(2)(d).

judicial review for decisions taken by national competent authorities in respect of required response measures.⁵²⁵

Other aspects of the liability regime applied to operators are left to the discretion of states to specify in their applicable domestic civil liability framework. For instance, states may provide for exemptions from or mitigations of liability in their domestic law 'as they see fit',⁵²⁶ specify time limits for actions related to response measures,⁵²⁷ establish financial limits for the recovery of costs and expenses related to response measures,⁵²⁸ and determine whether to require financial security on the part of operators.⁵²⁹ The requirement for a domestic civil liability framework may be met by applying existing domestic law or developing new civil liability rules and procedures, or a combination of both approaches.⁵³⁰ If developing a new civil liability framework only minimal requirements are specified by the Protocol that the framework shall include 'as appropriate' elements concerning: damage; the standard of liability (including whether this is strict or fault-based); channelling of liability; and the right to bring claims.⁵³¹ Given the flexibility afforded to states parties to develop their own civil liability framework to fulfil the objective of the Protocol, it is difficult to predict what these individual regimes will eventually look like and whether they will provide a satisfactory response to the need to establish liability and redress for biodiversity damage caused by LMOs. In this respect, it is interesting to compare the rules under the Protocol with the Implementation Guide to the Protocol prepared by the CropLife International/Global Industry Coalition (which includes eight major biotechnology companies) in 2012, which seeks 'to assist countries that do not have existing mechanisms to address damage to the conservation and sustainable use of biodiversity to develop a system for identifying responsible operators and requiring response measures in conformity with the Nagoya-Kuala Lumpur Supplementary Protocol'.⁵³²

General Instruments Relating to Dangerous Goods or Activities

1993 Lugano Convention

The 1993 Council of Europe Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (1993 Lugano Convention)⁵³³ aimed to provide adequate compensation for damage resulting from activities dangerous to the environment, and to provide for prevention and restitution.⁵³⁴ Its far-reaching provisions have not commended themselves to states, and it is unlikely to enter into force never having received a single ratification. Nevertheless, it is of interest in suggesting a different approach. In establishing rules of application beyond a particular industrial sector or activity or source of harm, the 1993 Lugano Convention

⁵²⁵ Art. 5(6). ⁵²⁶ Art. 6. ⁵²⁷ Art. 7. ⁵²⁸ Art. 8. ⁵²⁹ Art. 10. ⁵³⁰ Art. 12(1).

⁵³¹ Art. 12(3). See also A. Telesetsky, 'Introductory Note to the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress', 50 ILM 105 (2011).

⁵³² CropLife International/Global Industry Coalition, Implementation Guide to the Nagoya-Kuala Lumpur Supplementary Protocol to the Cartagena Protocol on Biosafety under the Convention on Biological Diversity, September 2012, available at <http://croplife.org/wp-content/uploads/2014/04/Implementation-Guide-to-the-Nagoya-Kuala-Lumpur-Supplementary-Protocol-on-Liability-and-Redress-to-the-Cartagena-Protocol-on-Biosafety.pdf>

⁵³³ Lugano, 21 June 1993, not in force, 32 ILM 480 (1993). C. de Sola, 'The Council of Europe Convention on Environmental Damage', 1 *Review of European Community and International Environmental Law* 411 (1992). Given that the treaty is of largely historical interest at the present juncture, the following text contains only a brief overview of the treaty's provisions. A fuller analysis is provided in the third edition of this text, pp. 766–70.

⁵³⁴ Art. 1.

moves beyond other efforts described above, and is noteworthy as the first civil liability instrument to include provisions on access to information.⁵³⁵

The Convention is a regional instrument, which is open to signature by the members of the Council of Europe, non-member states which have participated in its elaboration, and the EU, although it is possible for any other state to become a party after its entry into force, and is potentially applicable regardless of where the damage is suffered when the incident occurs in the territory of a party.⁵³⁶ Like other civil liability treaties, the 1993 Lugano Convention channels liability to the operator in respect of incidents causing damage from a dangerous activity,⁵³⁷ but departs from earlier instruments by not including a provision allowing parties to limit liability.⁵³⁸ The Convention does not require operators to be covered by mandatory insurance or other financial security, only requiring each party to ensure that operators are covered by a financial security scheme up to a certain limit where appropriate and taking due account of the risks of the activity.⁵³⁹

Damage covered by the 1993 Lugano Convention includes loss of life or personal injury, loss of or damage to property, and the costs of preventive measures and any loss or damage caused by preventive measures.⁵⁴⁰ The Convention also applies to environmental damage, which is:

loss or damage by impairment of the environment in so far as this is not considered to be damage within the meaning of [Article 2(7)(a) or (b)] ... provided that compensation for impairment of the environment, other than for loss of profit from such impairment, shall be limited to the costs of reasonable measures of reinstatement actually undertaken or to be undertaken.⁵⁴¹

The environment includes natural resources, property forming part of the cultural heritage, and the characteristic aspects of the landscape. 'Measures of reinstatement' means:

any reasonable measures aiming to reinstate or restore damaged or destroyed components of the environment, or to introduce, where reasonable, the equivalent of these components into the environment. Internal law may indicate who will be entitled to take such measures.⁵⁴²

This definition must be read in the context of the exceptions in Article 8, which provides, *inter alia*, that the operator will not be liable for damage that s/he proves 'was caused by pollution at

⁵³⁵ Arts. 13–16; see Chapter 15, pp. 707–8.

⁵³⁶ Arts. 32, 33(1) and 3(a). Exceptions to which the Convention will not apply are set out in Art. 4.

⁵³⁷ The 'operator' is the 'person who exercises control of a dangerous activity' (Art. 2(5)). An 'incident' is defined to include any 'sudden occurrence or continuous occurrence or any series of occurrences having the same origin, which causes damage or creates a grave and imminent threat of causing damage' (Art. 2(11)). This leaves open the possibility that preventive measures taken by a potential victim, such as evacuation or prohibitive measures taken to prevent an activity from being carried out, could give rise to the liability of the operator.

⁵³⁸ An earlier draft allowed internal law to limit the liability of the operator, taking account of the risks of the activity, the possible extent of damage and the aim of ensuring adequate compensation, and providing that the operator would not be entitled to limit his liability in certain circumstances (Council of Europe draft, 31 July 1992, DIR/JUR (92) 3, Art. 12).

⁵³⁹ Art. 12. ⁵⁴⁰ Art. 2(7)(a), (b) and (d). ⁵⁴¹ Art. 2(7)(c). ⁵⁴² Art. 2(8) and (10).

tolerable levels under local relevant circumstances'.⁵⁴³ This approach calls for comment. It indicates clearly the distinction to be drawn between pollution and liability for environmental damage; while all environmental damage is likely to be included in the definition of pollution, not all pollution will give rise to liability. Moreover, it does not define a 'tolerable level' of pollution, which is problematic in the absence of agreed international standards. Finally, it recognises that tolerable levels are not absolute and may vary between localities or regions, and implements a shift in the burden of proof requiring the operator to prove that the pollution is at a tolerable level, and not for the victim to prove that the level of pollution is intolerable.

Under the 1993 Lugano Convention, claims may be brought to the court of the place where the damage was suffered, or where the dangerous activity was conducted, or where the defendant has his/her habitual residence.⁵⁴⁴ In an innovative provision, the Convention envisages claims by environmental organisations. Under Article 18, any association or foundation whose statute aims at the protection of the environment and which complies with the requirements of the internal law of the party where the request is submitted may request the prohibition of a dangerous activity which is unlawful and poses a grave threat of damage to the environment, or that the operator be ordered to take measures to prevent an incident or damage (including after an incident), or that the operator be ordered to take measures of reinstatement.⁵⁴⁵ Requests by organisations for the prohibition of a dangerous activity may only be brought within a court or administrative authority of the place where the dangerous activity is or will be conducted, and other requests may be taken to such a court or to the court of the place where the measures are to be taken.⁵⁴⁶

2003 Civil Liability Protocol

In 2001, the governing bodies of and parties to the UNECE's 1992 Watercourses Convention and 1991 Industrial Accidents Convention established a working group to develop a Draft Legally Binding Instrument on Civil Liability for Transboundary Damage Caused by Hazardous Activities, Within the Scope of Both Conventions. The working group's mandate was to develop draft Articles to be adopted by a joint special session of the parties to both the Watercourses and Industrial Accidents Conventions in 2003.⁵⁴⁷ The proposal followed the work of an earlier UNECE task force, which considered rules on responsibility and liability for transboundary water resources.⁵⁴⁸

⁵⁴³ Art. 8(d). The operator may benefit from other exemptions if it is able to prove that damage was caused by, inter alia, war or a natural phenomenon of an 'exceptional, inevitable and irresistible character', or by the intent of a third party, or as a result of compliance with an order or compulsory measure of a public authority, or by a dangerous activity lawfully undertaken in the interests of the person who suffered the damage (Art. 8(a)-(c) and (e)).

⁵⁴⁴ Art. 19(1). The provisions on jurisdiction will not apply to parties bound by a treaty establishing rules for recognition and enforcement, such as the 1968 Brussels Convention and the 1989 Lugano Convention (Art. 24).

⁵⁴⁵ Art. 18(1). Internal law may determine the admissibility of such requests, and the administrative or judicial body before which such a request should be made, and the Convention sets out rules governing requests by environmental organisations registered under the law of another party (Art. 18(2), (3) and (5)). States are permitted to enter reservations in respect of this provision).

⁵⁴⁶ Art. 19(3) and (4).

⁵⁴⁷ ECE, Report of the Joint Special Session, UN Doc. ECE/MP.WAT/7 or ECE/CP.TEIA/5 (2001), 6.

⁵⁴⁸ 'Report and Guidelines on Responsibility and Liability Concerning Transboundary Water Pollution', ENVWA/R.45 (1990), as described in A. Rest, 'Ecological Damage in Public International Law', 22 *Environmental Policy and Law* 31 (1992); G. Handl, 'Balancing of Interests and International Liability for the Pollution of International Watercourses: Customary Principles of Law Revisited', 13 *Canadian Yearbook of International Law* 156 (1975); J. G. Polakiewicz, 'La Responsabilité de l'Etat en Matière de Pollution des Eaux Fluviales ou Souterraines Internationales', *Journal de Droit International* 283 (1991); A. Rest, 'New Tendencies in Environmental Responsibility/Liability Law: The Work of the UNECE Task Force on Responsibility and Liability Regarding Transboundary Water Pollution', 21 *Environmental Policy and Law* 135 (1991).

The Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters was adopted in 2003.⁵⁴⁹ Its primary aim is to provide for 'adequate and prompt compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters'⁵⁵⁰ affecting individual and other actors such as fishermen and downstream waterworks. An 'industrial accident' is defined under the Protocol as 'an event resulting from an uncontrolled development in the course of a hazardous activity: (i) in an installation, including tailing dams, for example during manufacture, use, storage, handling or disposal; (ii) during transportation on the site of a hazardous activity; or (iii) during off-site transportation via pipelines'.⁵⁵¹ A 'hazardous activity' is any activity in which one or more hazardous substances are or may be present in quantities at or exceeding certain threshold quantities listed in Annex I to the Protocol, and which is capable of causing transboundary effects on transboundary waters and their water uses in the event of an industrial accident.⁵⁵² The Protocol applies to 'damage' caused by the transboundary effects of an industrial accident on transboundary waters, so long as the damage is suffered in a party other than the party where the industrial accident occurred.⁵⁵³ The notion of damage, and related concepts such as 'measures of reinstatement' are defined in the Protocol terms that largely follow the 1993 Lugano Convention.

Overall, the provisions of the Protocol are similar in many respects to those of the 1993 Lugano Convention. Like that Convention, liability is channelled to the operator, who is required, following an industrial accident, to take all reasonable response measures to prevent, minimise or mitigate possible loss or damage or to arrange for environmental clean-up.⁵⁵⁴ The standard of liability is strict liability, subject to a number of exceptions, including a provision allowing compensation to be reduced in the event of contributory fault.⁵⁵⁵ The Protocol's provisions in respect of claims for compensation, limitation periods, *lis pendens* and the recognition and enforcement of judgments parallel those of the Lugano Convention. Unlike that treaty, however, the Protocol sets limits on operator liability that increase in stringency based on the toxicity of the substances involved.⁵⁵⁶ Accidents involving Category A hazardous activities have a limit of 10 million units of account; Category B and C hazardous activities have a limit of 40 million units of account.⁵⁵⁷ In addition, the Protocol sets out a requirement for the operator to maintain appropriate financial security.⁵⁵⁸ The limits on liability and minimum financial security requirements were agreed by all actors in the negotiations, including the insurance sector, which should reduce the obstacles to ratification that have been encountered by the 1993 Lugano Convention. The Protocol is open for ratification by states parties to one or both of the Watercourses and Industrial Accidents Conventions, but countries outside the UNECE may accede to the Protocol upon approval by the Meeting of the Parties.⁵⁵⁹

⁵⁴⁹ Kiev, 21 May 2003, not in force, available at www.unece.org/fileadmin/DAM/env/civil-liability/documents/protocol_e.pdf. See also P. Dascalopoulou and A. Kolliopoulos, 'The 2003 Kiev Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters', in A. Tanzi et al. (eds.), *The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes* (Leiden: Martinus Nijhoff, 2015), 330.

⁵⁵⁰ Art. 1. ⁵⁵¹ Art. 2(2)(e). ⁵⁵² Art. 2(2)(f). ⁵⁵³ Art. 3. ⁵⁵⁴ Arts. 2(2)(h) and 6. ⁵⁵⁵ Art. 4.

⁵⁵⁶ Art. 9. There is no limit on liability in respect of reckless or intentional acts covered by Art. 5. ⁵⁵⁷ Annex II.

⁵⁵⁸ Art. 11. ⁵⁵⁹ Art. 28.

CONCLUSIONS

With the exception of the oil pollution and nuclear regimes, the rules of international law governing liability for environmental damage remain relatively undeveloped, particularly in relation to rules of state liability. States remain reluctant to put in place rules regarding state liability and seem to regard the ambiguities respecting the application of general international law principles of responsibility to environmental damage as a convenient buffer against state responsibility claims.⁵⁶⁰ States also appear unwilling to bring claims against other states for environmental and other damage even where there might be good legal grounds for doing so, as the practice following the Chernobyl accident indicated.

It is particularly in regard to state liability that the 'expeditious and more determined' cooperation called for by Principle 13 of the Rio Declaration remains to be addressed. Since the 1972 Stockholm Conference, developments have been limited. Although the ILC's 2001 draft Articles on State Responsibility introduced a codified framework, the ILC's ambition to develop principles of state liability for environmental damage which are of general application was overhauled in favour of a pragmatic approach that simply focuses on the allocation of loss. In view of the unwillingness of any state to bring a claim against the Soviet Union following the Chernobyl accident in 1986 for environmental or other damage, the principal developments have been: elaboration by ITLOS of the principles of state liability pertaining to sponsored activities in the deep seabed area pursuant to Article 139 of the 1982 UNCLOS; the clarification of state liability rules in Annex VI to the 1991 Antarctic Environmental Protocol (although this Annex is yet to enter into force); and the practice of the UN Compensation Commission in articulating standards for restoration and valuation of environmental damage. Indeed, the Panel reports of the UN Compensation Commission may well be seen to define an approach that may be applied more broadly. Few state claims for liability for environmental damage have been made since 1972, notable exceptions being the successful Canadian claim against the Soviet Union following the crash of *Cosmos 954* in 1978 and the Hungarian claim against Slovakia in relation to the consequences of the operation of the Gabčikovo barrage (although the ICJ did not take up the opportunity to address the particularities of that claim). The legal issues that need to be addressed in relation to state liability are broadly similar to those concerning civil liability, although the range of activities for which a state might be liable is extensive. Specific issues of particular concern include liability for damage to the environment in areas beyond national jurisdiction, the question of financial limits (if any) of a state's liability, and the distinction between liability for damage to the environment of a state and liability for damage to its property interests. While important clarifications of the operation of rules of state liability have been offered by international case law, and the practice of the UN Compensation Commission, it seems unlikely that state responsibility principles will play an important role in addressing global environmental problems, especially those such as climate change which pose difficult issues around causation and attribution of liability.

In relation to civil liability, Principle 13 of the Rio Declaration recognised the importance of further development of national and international laws on liability and compensation. Since UNCED, states have shown greater willingness to impose constraints on the conduct of potentially hazardous activities through the adoption of civil liability regimes, although this is

⁵⁶⁰ Brunnée, 'Of Sense and Sensibility', 354.

generally balanced by awareness of the significant costs to the private sector conducting hazardous but socially or economically necessary activities. The body of international civil liability instruments in force is now impressive, and the case law under some, such as the oil pollution rules, has established useful precedents on the basis of which further developments and innovations can be based. Significant developments include the adoption of a liability protocol to the 1989 Basel Convention, the conclusion of the Nagoya–Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol, the finalisation of civil liability rules under the Antarctic Environmental Protocol, and the adoption of regimes on hazardous and noxious substances and activities, although in each case the relevant instruments are yet to enter into force. These developments ‘suggest slow but steady progress towards acceptance of environmental liability as an important international policy tool’.⁵⁶¹ Gaps still need to be filled for activities that are not covered by liability rules, and the geographical coverage of existing instruments needs to be enhanced by bringing on board the large number of states who remain outside the liability regimes. The ‘second generation’ of civil liability rules also face a series of complex issues, including: the possibility of conflicting approaches to the definition of environmental damage; ensuring that permitted limitations on liability do not serve to subsidise potentially harmful activities; establishing effective procedures before courts and tribunals for dealing with mass claims in the event of catastrophic accidents or events; and developing schemes to provide for supplementary funding in the event that a liable person runs out of funds, or cannot be located, or the damage exceeds a permitted financial limit of liability.

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17

Human Rights and International Humanitarian Law

CHAPTER OUTLINE

The chapters in Part IV are concerned with the relationship between international environmental law and other relevant areas of international law. This chapter discusses the linkage of environmental issues with human rights law and the laws of war (international humanitarian law).

The first part of the chapter considers the human rights–environment linkage. It discusses:

1. international legal developments recognising the link between human rights and environmental protection, including the emergence of environmental rights at the global, regional and national levels;
2. how environmental degradation impacts economic, social and cultural rights, as well as the case law of regional human rights courts and tribunals considering this linkage; and
3. the relationship between environmental protection and civil and political rights protections, including treaty and case law developments recognising 'procedural' environmental rights.

The second part of the chapter turns to the relationship between international humanitarian law and international environmental law, discussing two central aspects:

- (a) how military activities may impact the environment and applicable international rules; and
- (b) how environmental degradation may contribute to armed conflicts and evolving rules of 'environmental security' in international law.

INTRODUCTION

With the advent of sustainable development as a key principle of international law, no area of international law operates in 'clinical isolation' from any other.¹ This is particularly the case for international environmental law as issues of environmental protection are strongly interconnected with questions around social and economic development.² This chapter considers the interrelationship of the environment with international human rights law and the laws governing war and armed conflict (international humanitarian law). The linkage of the environment with human rights and international humanitarian law has been an issue for international

¹ *Reformulated Gasoline*, WTO Appellate Body Report, 621. On the trade and environment interlinkage see further, Chapter 18, pp. 843–99.

² See Chapter 6, pp. 217–22.

environmental law since the earliest stages of its development in the 1960s and 1970s, but has achieved greater prominence with increasing recognition of the close relationship between environmental protection and the realisation of human rights and the achievement of human security, particularly in the face of climate change threats. Acknowledging these trends, the 2015 Paris Agreement included – for the first time in a climate treaty – language on human rights and the concept of ‘climate justice’.³

The development of international human rights and international humanitarian law pre-dates international environmental law and provides a rich source of comparative experience. International environmental law equally raises many issues that will be familiar to human rights and international humanitarian lawyers. In the environmental context, questions related to minimum international standards and the role of individuals and other non-governmental organisations in the international legal process have raised analogous issues to those arising in international human rights and humanitarian law. The international legal issues are closely related, as is now reflected in the activities of human rights bodies.⁴ As UNCED highlighted, a key question at the interface of human rights and humanitarian law with the environment concerns the extent to which international environmental law should adopt an anthropocentric approach, based on the view that environmental protection is primarily justified as a means of protecting humans, rather than as an end in itself. The Rio Declaration endorses an anthropocentric approach, with Principle 1 stating that: ‘Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.’⁵ Legal developments in other fora and contexts, however, reflect a greater environmental consciousness and suggest that the protection of the environment is often recognised on its own terms, and not simply a means of protecting humans.⁶

In the 1980s, human rights issues related to environmental protection became the subject of increasing attention following a number of well-known cases, including the 1988 murder of the Brazilian union organiser Chico Mendes, restrictions on the provision of information to citizens of the Soviet Union following the accident at the Chernobyl nuclear power plant, and the limited availability of remedies for breaches of environmental standards and obligations under national legal systems. Allegations of civil rights breaches continue to abound in the environmental field, and have focused on a range of issues, from the suppression of environmental discussion and debate and of environmental campaigners, to restrictions on the right of association and

³ 2015 Paris Agreement, Preamble.

⁴ See e.g. the Conclusions of Experts (2002) following the joint seminar of the Office of the High Commissioner for Human Rights (OHCHR) and UNEP, pursuant to Decision 2001/111 of the UN Commission on Human Rights, on promoting and protecting human rights in relation to environmental questions, available at www.ohchr.org/Documents/Issues/Environment/Reportonjoint_OHCHR-UNEPseminar2002.pdf; UNEP and the OHCHR, High-Level Expert Meeting, ‘The New Future of Human Rights and the Environment: Moving the Global Agenda Forward’ in Nairobi from 30 November to 1 December 2010, available at www.unep.org/environmental/governance/Events/HumanRightsandEnvironment/tabid/2046/language/en-US/Default.aspx; see also the reports of the UN Special Rapporteur on Human Rights and the Environment issued since 2012, available at www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/SREnvironmentIndex.aspx. In addition, the UN Human Rights Council has passed resolutions focusing specifically on human rights and climate change: UN HRC Res. 7/23, UN Doc. A/HRC/RES/7/23 (28 March 2008); UN HRC Res. 10/4, UN Doc. A/HRC/10/29 (20 March 2009); UN Doc. A/HRC/RES/18/22 (2011); UN Doc. A/HRC/RES/26/27 (2014); UN Doc. A/HRC/RES/29/15 (2015); UN Doc. A/HRC/RES/32/33 (2016).

⁵ Principle 1 – cf. Principle 1 of the 1972 Stockholm Declaration (see p. 814).

⁶ See, in particular, regulations concerning the protection of biodiversity (Chapter 10, pp. 388ff.); and the inclusion of a head of environmental damage in civil liability conventions (Chapter 16, e.g. p. 741).

assembly and rights of access to environmental information, as well as substantive breaches of civil rights protections relating to life, privacy and property. As the first part of the chapter discusses, these linkages between human rights and the environment – both in respect of civil and political rights and, increasingly, economic, social and cultural rights – are now widely recognised, and are reflected in a growing body of cases before human rights bodies.⁷ Of equal note has been the 1998 Aarhus Convention, which establishes formal participation and informational rights and affirms, in its Preamble, that ‘every person has the right to live in an environment adequate to his or her health or well-being’.⁸

Human rights issues also increasingly arise in relation to environmentally displaced people forced to flee areas because of drought or desertification (or climate change).⁹ Questions of environmental displacement often intersect with humanitarian issues involving the use of force and the environmental impacts of war, which are considered in the second part of this chapter. The term ‘environmental security’ has been coined to describe risks of armed conflict that arise due to conditions of environmental degradation, inequitable access to natural resources or instances of transboundary pollution.¹⁰ These new concerns supplement the more traditional focus of the laws of war regarding the environment on the extent to which they afford environmental protection during times of armed conflict and constrain military activities.

HUMAN RIGHTS LAW

Development of International Human Rights Law

The UN Charter marked the beginnings of modern international human rights law; in the same way, it established the international framework within which the international community would, some twenty-five years later, address many international environmental issues.¹¹

⁷ The interplay between environmental and human rights norms was also an issue raised in the *Aerial Herbicide Spraying* case filed at the ICJ by Ecuador against Colombia, but later withdrawn (shortly before the opening of the oral hearings) following an Agreement of 9 September 2013 reached by the parties that ‘establishes, inter alia, an exclusion zone, in which Colombia will not conduct aerial spraying operations, creates a Joint Commission to ensure that spraying operations outside that zone have not caused herbicides to drift into Ecuador and, so long as they have not, provides a mechanism for the gradual reduction in the width of the said zone; according to the letters, the Agreement sets out operational parameters for Colombia’s spraying programme, records the agreement of the two governments to ongoing exchanges of information in that regard, and establishes a dispute settlement mechanism’ (ICJ Press Release, No. 2013/20, 17 September 2013).

⁸ See also Art. 1; Chapter 15, pp. 710–12; and J. Ebbeson, ‘The Notion of Public Participation in International Environmental Law’, 8 *Yearbook of International Environmental Law* 51 (1997). Upon signature, the United Kingdom declared that this right was merely ‘aspirational’ in character.

⁹ The term ‘displaced persons’ is generally used in place of more popular terms like environmental or climate ‘refugees’, given the restrictive notion of a ‘refugee’ under the 1951 Refugee Convention and the lack of a clear legal status for environmentally displaced persons on that basis (J. McAdam, ‘Environmental Migration’, in A. Betts (ed.), *Global Migration Governance* (Oxford: Oxford University Press, 2011), 157). On the integration of environmental considerations into the work of the UN High Commissioner for Refugees, see UNHCR, *Environmental Guidelines* (2006).

¹⁰ See e.g. UNEP, ‘Environmental Security’, www.unep.org/roe/KeyActivities/EnvironmentalSecurity/tabid/54360/Default.aspx

¹¹ See generally D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), ch. 18; A. Boyle, ‘Relationship Between International Environmental Law and Other Branches of International Law’, in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), ch. 7; P. Dupuy and J. E. Viñuales, *International Environmental Law* (Cambridge: Cambridge University Press, 2015), ch. 10.

The Charter reaffirmed the faith of the 'Peoples of the United Nations' in fundamental human rights and provided that one of the UN's purposes was to promote and encourage 'respect for human rights and for fundamental freedoms for all without distinction as to race, sex, language or religion'.¹² The UN Charter does not identify the human rights and fundamental freedoms that would contribute to the economic and social advancement of all peoples; nor does it provide any support for the idea that a clean or healthy environment should or did form a part of those rights and freedoms.

The first international instrument to elaborate detailed human rights standards applicable globally was the Universal Declaration of Human Rights (UDHR), adopted by the UN General Assembly in 1948.¹³ The Declaration was subsequently supplemented in 1966 by two treaties open to all states: the International Covenant on Economic, Social and Cultural Rights (ICESCR)¹⁴ and the International Covenant on Civil and Political Rights (ICCPR).¹⁵ These instruments have since been supplemented by five regional human rights treaties:¹⁶ the 1950 European Convention for the Protection of Human Rights and Fundamental Freedoms (ECHR);¹⁷ the 1961 European Social Charter (ESC);¹⁸ the 1969 American Convention on Human Rights (ACHR);¹⁹ the 1981 African Charter of Human and Peoples' Rights (1981 African Charter);²⁰ and the Arab Charter on Human Rights (2004).²¹ Four of these instruments (the ICESCR, the African Charter, the ACHR and the Arab Charter of Human Rights) recognise a link between the environment and human rights. None of the four identifies environmental rights as being subject to specific rules of protection, although they do allow a conceptual framework and approach for introducing environmental concerns and for the subsequent introduction of express environmental language.

Environmental Protection and Human Rights

In 1968, the UN General Assembly first recognised the relationship between the quality of the human environment and the enjoyment of basic rights.²² The 1972 Stockholm Declaration proclaimed that man's natural and human-made environment 'are essential to his well-being

¹² Preamble and Arts. 1(3) and 55. ¹³ UNGA Res. 217 (III) (1948).

¹⁴ Annex to UNGA Res. 2200 (XXI) (1966), 993 UNTS 3, in force 3 January 1976.

¹⁵ Annex to UNGA Res. 2200 (XXI) (1966), 999 UNTS 717, in force 23 March 1976.

¹⁶ See also the ASEAN Declaration on Human Rights, Phnom Penh, 18 November 2012, available at <http://aichr.org/documents>. In 2009 the ASEAN nations established the ASEAN Intergovernmental Commission on Human Rights. However, the Asia Pacific region remains the only region without a regional human rights treaty.

¹⁷ Rome, 4 November 1950, in force 3 September 1953, 213 UNTS 222. The ECHR has been supplemented by sixteen Protocols. Protocol 11, which entered into force in November 1998, replaced the European Commission and Court with a single Court (see Chapter 5, p. 189). Protocol 16, not yet in force, will allow national courts to request advisory opinions of the European Court of Human Rights on questions of principle relating to the rights protected under the ECHR.

¹⁸ Turin, 18 October 1961, in force 26 February 1965, ETS No. 35.

¹⁹ San José, 22 November 1969, in force 18 July 1978, 9 ILM 673 (1970). The ACHR is supplemented by the San Salvador Additional Protocol on Economic, Social and Cultural Rights, 14 November 1988, in force 16 November 1999, 28 ILM 161 (1989).

²⁰ Banjul, 27 June 1981, in force 21 October 1986, 21 ILM 59 (1982).

²¹ Tunisia, 23 May 2004, in force 15 March 2008; reprinted in 12 International Human Rights Report 893 (2005). See also 'Arab Charter on Human Rights' (trans. M. A. Al-Midani and M. Cabanettes, rev. S. M. Akram), 24 *Boston University International Law Journal* 147 (2006).

²² UNGA Res. 2398 (XXII) (1968). See also the Proclamation of Tehran, UN Doc. A/CONF.32/41, para. 18, recognising the dangers posed by scientific discoveries and technological advances for the rights and freedoms of individuals.

and to the enjoyment of basic human rights – even the right to life itself,²³ and declared in Principle 1 that:

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations.

The international community has not, however, defined in practical terms the threshold below which the level of environmental quality must fall before a breach of a person's human rights will have occurred. Nevertheless, some non-binding and widely accepted declarations supporting the individual's right to a clean environment have been adopted. The 1982 World Charter for Nature was one of the first instruments to recognise the right of individuals to participate in decision-making and have access to means of redress when their environment has suffered damage or degradation. The 1989 Declaration of the Hague on the Environment recognised 'the fundamental duty to preserve the ecosystem' and 'the right to live in dignity in a viable global environment, and the consequent duty of the community of nations *vis-à-vis* present and future generations to do all that can be done to preserve the quality of the environment'.²⁴ In 1990 the UN General Assembly declared that 'all individuals are entitled to live in an environment adequate for their health and well-being',²⁵ and the UN Commission on Human Rights (now the Human Rights Council) affirmed the relationship between the preservation of the environment and the promotion of human rights.²⁶ At that time, the then Sub-Commission on Prevention of Discrimination and Protection of Minorities began to consider the relationship between human rights and the movement and dumping of toxic and dangerous products and wastes,²⁷ and between the environment and human rights in the context of chemical weapons.²⁸ The Sub-Commission also received reports on 'Human Rights and the Environment', which analysed many of the key concepts and provided information on decisions of international bodies,²⁹ and the then UN Commission on Human Rights declared that the movement and dumping of toxic and dangerous products endangers 'the right to the highest standard of health, including its environmental aspects'.³⁰ The Commission's successor, the Human Rights Council, has continued to emphasise these linkages.³¹ Efforts to develop language

²³ Preambular para. 1. ²⁴ Declaration of The Hague on the Environment, 11 March 1989, 28 ILM 1308 (1989).

²⁵ UNGA Res. 45/94 (1990). ²⁶ See e.g. Res. 1990/41 (1990).

²⁷ Res. 1988/26 (1988); see also Res. 1989/12 (1989) on the movement and dumping of toxic and dangerous products and waste, declaring in draft terms that 'the movement and dumping of toxic and dangerous products endanger basic human rights such as the right to life, the right to live in a sound and healthy environment and consequently the right to health'. See also n. 32.

²⁸ Sub-Commission on Prevention of Discrimination and Protection of Minorities, Res. 1989/39, UN Doc. E/CN.4/1990/2, 1 September 1989. This Sub-Commission has ceased to exist. The new expert advisory committee is the Human Rights Council Advisory Committee, which has also considered this relationship: see e.g. Doc. A/HRC/AC/6/CRP.3, 22 December 2010, Arts. V and VI.

²⁹ See Final Report by Special Rapporteur, Ms Fatma Zohra Ksentini, UN Doc. E/CN.4/Sub.2/1994/9 (including a Draft Declaration on Principles of Human Rights and the Environment). The Sub-Commission has been replaced by the Human Rights Advisory Committee.

³⁰ Res. 1990/43, UN Doc. E/CN.4/1990/94, 104 (1990); see also the reports by the Special Rapporteur, UN Doc. E/CN.4/2001/55 (19 January 2001).

³¹ See Res. 5/1, UN Doc. A/HRC/RES/5/1 (2007), Appendix I, and Res. 9/1, UN Doc. A/HRC/RES/9/1 (2008), which, *inter alia*, extended the mandate of the Special Rapporteur on the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, and the reports by the Special

on environmental rights further continues under the auspices of several international institutions, including the Council of Europe and the UN Economic Commission for Europe.³² Other efforts include the IUCN's draft International Covenant on Environment and Development prepared by the IUCN's Commission on Environmental Law, the fourth edition of which was published in 2010.³³ The 2007 UN Declaration on Indigenous and Peoples' Rights emphasises the close relationship of indigenous peoples with their environment, recognising rights over traditional lands and resources.³⁴

Many states have adopted national measures linking the environment and individual rights.³⁵ The constitutions of more than one hundred states expressly recognise the right to a clean environment,³⁶ varying in their approach: they provide for a state duty to protect and preserve the environment;³⁷ or declare the duty to be the responsibility of the state and citizens;³⁸ or declare that the duty is imposed only upon citizens;³⁹ or declare that the individual has a substantive right in relation to the environment,⁴⁰ or provide for an individual right together with the individual or collective duty of citizens to safeguard the environment;⁴¹ or provide for a combination of various state and citizen duties together with an individual right.⁴² The 2008 Ecuadorian Constitution goes significantly further than these provisions declaring that

Rapporteur, UN Doc. A/HRC/5/5, 5 May 2007; UN Doc. A/HRC/7/21, 18 February 2008; and UN Doc. A/HRC/12/26, 15 July 2009. See also the reports of the UN Special Rapporteur on Human Rights and the Environment issued since 2012, available at www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/SREnvironmentIndex.aspx

³² Recommendation of the Parliamentary Assembly of the Council of Europe on Environment and Human Rights, Eur. Parl. Ass., 24th Sess. Recommendation 1614 (2003); Recommendation of the Parliamentary Assembly of the Council of Europe on the Formulation of a European Charter and a European Convention on Environmental Protection, Eur. Parl. Ass., 42nd Sess. Recommendation 1130 (1990); and the Draft UNECE Charter on Environmental Rights and Obligations, UN Doc. ENWA/R.38, December 1990.

³³ IUCN, *Draft International Covenant on Environment and Development* (2010, 4th edn); the Preamble recognises that 'respect for human rights and fundamental freedoms, including non-discriminatory access to basic services, is essential to the achievement of sustainable development'; see also Art. 4. The draft provided that all persons have the fundamental right 'to live in an ecologically sound environment adequate for their development, health, well-being and dignity' (Art. 14(1)), and that states have a 'duty to protect the environment' (Preamble and Art. 13(2)); and see e.g. Arts. 6 and 59.

³⁴ Declaration on the Rights of Indigenous Peoples, adopted by UNGA Res. 61/295 on 13 September 2007, see in particular Arts. 25–27, 29 and 32.

³⁵ Note in this regard that the Charter of Fundamental Rights of the European Union, OJ C83/02, 30 March 2010, 389, does not frame environmental concerns in terms of rights ('A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development' (Art. 37)). Art. 6 of the Treaty on European Union, OJ C83, 30 March 2010, 1, now states that this Charter has 'the same legal value' as the EU Treaties. See also Art. 111 of the Treaty establishing the East African Community ('a clean and healthy environment is a prerequisite for sustainable development'). At the UN level, another initiative is the work on Harmony with Nature (www.harmonywithnatureun.org) including resolutions of the UNGA and commemoration of International Mother Earth Day.

³⁶ See J. R. May and E. Daly, *Global Environmental Constitutionalism* (Cheltenham, UK: Edward Elgar, 2014). An excellent online resource for tracking environmental constitutional rights is provided by <http://envirorightsmap.org>

³⁷ Earthjustice Legal Defense Fund, *Environmental Rights Report 2008: Human Rights and the Environment* (2008), available at <http://earthjustice.org/sites/default/files/library/reports/2008-environmental-rights-report.pdf>, Appendix: Constitutional Provisions Relating to Environmental Rights, 21, including China, Equatorial Guinea, Germany, Greece, Honduras, Mexico, Mozambique, Namibia, the Netherlands, Nigeria, Panama, Paraguay, the Philippines, Romania, Taiwan, Thailand and the United Arab Emirates.

³⁸ *Ibid.*, including Albania, Bahrain, Bulgaria, Ethiopia, Guatemala, Guyana, India, Iran, Papua New Guinea, Sri Lanka, Sweden and Tanzania.

³⁹ *Ibid.*, including Algeria, Bolivia, Haiti, the Russian Federation and Vanuatu.

⁴⁰ *Ibid.*, including Burkina Faso and Hungary.

⁴¹ *Ibid.*, including South Korea, Poland, Portugal, Spain and the former Yugoslavia.

⁴² *Ibid.*, including Brazil, Chile, Colombia, Ecuador, Nicaragua, Peru, Turkey and Vietnam.

'Nature or Pachamama, where life is reproduced and exists, has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution. Every person, people, community or nationality, will be able to demand the recognitions of rights for nature before the public organisms.'⁴³

What are the practical consequences of recognising the link between human rights law and the protection of the environment? The question may be addressed in the context of the distinction that has been drawn in international human rights law between economic, social and cultural rights, and civil and political rights.⁴⁴ The nature and extent of economic, social and cultural rights determines the substantive rights to which individuals are entitled, including in particular the level below which environmental standards (for example, in relation to pollution) must not fall if they are to be lawful. Civil and political rights, which are also substantive in nature and sometimes referred to as 'due process' rights, determine procedural and institutional rights (such as the right to information or access to judicial or administrative remedies), as well as offering protections against governmental interference with life, family, privacy and property. International environmental law has progressed considerably in building upon existing civil and political rights and developing important new obligations, most notably in the 1998 Aarhus Convention, which provides for rights of access to information, to participation in decision-making, and to access to justice.⁴⁵ While economic, social and cultural rights have traditionally been less well developed in practice, recent judicial decisions indicate that international courts and tribunals are increasingly willing to find violations of substantive environmental rights.

Economic, Social and Cultural Rights

Although the existence of economic, social and cultural rights under international law has been less widely accepted by elements of the international community, it is these rights which promise to allow human rights bodies to consider whether substantive environmental standards and conditions are being maintained at satisfactory levels. Translating general economic, social and cultural rights into specific environmental standards is not an easy task, although it is one that some international bodies are willing to take on. Each of the major human rights instruments identified above recognises the existence of at least some such rights. In the context of environmental issues, those which appear to be most relevant include: the entitlement to the realisation of economic, social and cultural rights indispensable for dignity;⁴⁶ the right to a standard of living adequate for health and well-being;⁴⁷ the right to the highest attainable standard of health (including improvement of all aspects of environmental and industrial hygiene);⁴⁸ the right of all

⁴³ Constitution of Ecuador, 2008, Title II, Ch 7, Art. 71. See also Bolivian Law of the Rights of Mother Earth, December 2010, English translation available at www.worldfuturefund.org/Projects/Indicators/motherearthbolivia.html

⁴⁴ See also the Report of the Independent Expert on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, John H. Knox, Mapping Report, A/HRC/25/53, 30 December 2013, which adopts a different classification distinguishing between procedural environmental rights, substantive environmental rights and rights of vulnerable groups.

⁴⁵ See Chapter 15, pp. 710–12; and Chapter 5, p. 163.

⁴⁶ 1948 UDHR, Art. 22; 1969 ACHR, Art. 26; 1981 African Charter, Art. 22.

⁴⁷ 1948 UDHR, Art. 25; 1966 ICESCR, Art. 11(1); 2004 Arab Charter, Art. 38.

⁴⁸ 1966 ICESCR, Art. 12(1) and (2)(b); 1961 ESC, Art. 11; 1981 African Charter, Art. 16(1); 2004 Arab Charter, Art. 39; the European Social Charter Committee of Independent Experts, has found that Article 11 on the right to protection of health includes the right to a healthy environment (see *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Decision of 6 December 2006 (Merits), paras. 195–6).

peoples to freely dispose of their natural wealth and resources;⁴⁹ safe and healthy working conditions;⁵⁰ the protection of children against social exploitation;⁵¹ the right to enjoy the benefits of scientific progress and its applications;⁵² and the right of peoples to self-determination and the pursuit of economic and social development.⁵³

Environmental degradation could be linked to the violation of these and other rights.⁵⁴ Lack of access to drinking water which is free from toxic or other contaminants, pollution of the atmosphere by heavy metals and radioactive materials, the dumping of hazardous and toxic wastes in the vicinity of people's homes can all be viewed and treated as violations of fundamental economic, social and cultural rights. This is now reflected, for example, in General Comment No. 15 (Right to Water) of the UN Committee on Economic, Social and Cultural Rights, affirming that everyone is entitled to safe and acceptable water for personal and domestic use.⁵⁵ In the United States, the environmental degradation in areas predominantly populated by poor communities and ethnic minorities is known as 'environmental discrimination' or 'environmental racism', terms emphasising the linkage between environmental rights and human rights. This theme is also reflected in the emerging issue of 'climate justice'.⁵⁶

Nevertheless, only three regional human rights treaties expressly recognise environmental rights.⁵⁷ Under the 1981 African Charter, 'all peoples shall have the right to a general satisfactory

⁴⁹ 1966 ICESCR, Art. 1(2); 1966 ICCPR, Art. 1(2); 1981 African Charter, Art. 21; 2004 Arab Charter, Art. 2.

⁵⁰ 1966 ICESCR, Art. 7(b); 1961 ESC, Art. 3; 2004 Arab Charter, Art. 34(2).

⁵¹ 1966 ICESCR, Art. 10(3); 1961 ESC, Art. 17; 2004 Arab Charter, Art. 34(3).

⁵² 1966 ICESCR, Art. 15(1)(b); 2004 Arab Charter, Art. 42.

⁵³ 1981 African Charter, Art. 20(1); 2004 Arab Charter, Art. 37.

⁵⁴ See further Report of the Independent Expert on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, John H. Knox, Mapping Report, A/HRC/25/53, 30 December 2013, paras. 44ff.

⁵⁵ E/C.12/2002/11, 26 November 2002.

⁵⁶ 'Climate justice' is used in a variety of different ways in the literature and in state practice. For instance, a common notion is that centred on the idea of the historical responsibility of developed countries for greenhouse gas emissions necessitating that they 'pay' for the pollution they have caused. Other notions are based on ensuring per capita equity, i.e. so everyone is given an equal slice of the greenhouse gas emissions pie. Further emerging ideas of climate change justice seek to extend beyond a focus on equity to consider the development and environmental conditions necessary to address climate change vulnerability. See David Schlosberg, 'Climate Justice, Vulnerability, and Adaptation: A Capabilities Approach', Paper Prepared for the 'Environmental Governance' conference organised by the Centre for Deliberative Democracy and Global Governance, Australian National University, Canberra, Australia, July 2011 (copy on file with the authors); David Schlosberg, 'Justice, Ecological Integrity, and Climate Change', in A. Thompson and J. Bendik-Keymer (eds.), *Ethical Adaptation to Climate Change: Human Virtues of the Future* (Cambridge, MA/London: Harvard University Press, 2012). See also S. M. Gardiner, 'Climate Justice', in J. Dryzek, R. B. Norgaard and D. Schlosberg, *The Oxford Handbook of Climate Change and Society* (Oxford: Oxford University Press, 2011), ch. 21.

⁵⁷ Article 37 of the EU Charter of Fundamental Rights falls well short of declaring the existence of a substantive right. The efforts by the Council of Europe in the 1970s to draft a Protocol on environmental rights failed due to a lack of political support by states. The draft Protocol stated:

Article 1

1. No one should be exposed to intolerable damage or threats to his health or to intolerable impairment of his well-being as a result of adverse changes in the natural conditions of life.

2. An impairment of well-being may, however, be deemed to be tolerable if it is necessary for the maintenance and development of the economic conditions of the community and if there is no alternative way of making it possible to avoid this impairment.

Article 2

1. If adverse changes in the natural conditions are likely to occur in his vital sphere as a result of the actions of other parties, any individual is entitled to demand that the competent agencies examine the situation in all cases where Art. 1 applies.

environment favourable to their development'.⁵⁸ The 2004 Arab Charter on Human Rights encompasses within the right of every person to 'an adequate standard of living for himself and his family', 'the right to a healthy environment'.⁵⁹ The 1988 San Salvador Protocol to the 1969 ACHR provides in its Article 11 that:

1. Everyone shall have the right to live in a healthy environment and to have access to basic public services.
2. The state parties shall promote the protection, preservation and improvement of the environment.

The San Salvador Protocol distinguishes between the *right* of individuals to 'live in a healthy environment' and the *positive obligation* of states to protect, preserve and improve the environment. The failure of a state to carry out that obligation can therefore give rise to an enforceable right of action.

The relationship between environmental protection and economic and social rights is recognised in other treaties. The 1989 Convention on the Rights of the Child, for example, requires education for '[t]he development of respect for the natural environment'.⁶⁰ The 1989 Convention Concerning Indigenous and Tribal Peoples in Independent Countries – which was invoked by Ecuador in proceedings before the ICJ against Colombia, but later settled by agreement⁶¹ – requires governments to protect the human rights and fundamental freedoms of indigenous and tribal peoples and to guarantee respect for their integrity,⁶² including special measures to be adopted to protect and preserve the environment of indigenous and tribal peoples.⁶³ It also states that the rights of these peoples to the natural resources of their lands must be specially safeguarded.⁶⁴

The practical application of economic, social and cultural rights requires international and national courts and tribunals to determine the circumstances in which environmental standards have fallen below acceptable international levels. These standards are being developed, particularly at the regional level. They establish minimum standards of water and air quality, which might provide a basis for arguing that standards have fallen below minimum acceptable levels and that an individual right of action to enforce these minimum standards might arise. However, in the absence of specific, binding international standards, it may be more difficult for such claims to succeed, unless the environmental conditions are so poor that blatant abuses will be considered to have occurred. An emerging practice on appropriate standards is reflected in international decisions of human rights courts and tribunals, indicating a growing willingness to identify violations of 'environmental' rights.

This change is particularly apparent in respect of the 1950 ECHR, which does not include express provisions on the environment. A 1976 decision of the European Commission on Human

2. Any individual acting under paragraph 1 shall, within a reasonable time, receive detailed information stating what measures – if any – have been taken to prevent those adverse changes.

Reprinted in A. Rosas and J. Helgesen (eds.), *Human Rights in a Changing East–West Perspective* (London: Pinter, 1990).

⁵⁸ 1981 African Charter, Art. 24. ⁵⁹ 2004 Arab Charter, Art. 38.

⁶⁰ 28 November 1989, in force 2 September 1990, 29 ILM 1340 (1990), Art. 29(e); see M. Fitzmaurice and A. Fijalkowski (eds.), *Right of the Child to Clean Environment* (Aldershot, UK: Ashgate, 2000).

⁶¹ See n. 7.

⁶² Geneva, 27 June 1989, in force 5 September 1991, 28 ILM 1382 (1989), Arts. 2 and 3; see also the UN Declaration on the Rights of Indigenous Peoples (n. 35).

⁶³ Arts. 4(1) and 7(4). ⁶⁴ *Ibid.*

Rights illustrated the difficulty in making environmental claims. In *X and Y v. Federal Republic of Germany*, the applicants were members of an environmental organisation that owned 2.5 acres of land for nature conservation. They complained on environmental grounds about the use of adjacent marshlands for military purposes. The Commission rejected the application as incompatible *rationae materiae* with the ECHR on the ground that 'no right to nature preservation is as such included among the rights and freedoms guaranteed by the Convention and in particular by Articles 2, 3 or 5 as invoked by the applicant'.⁶⁵

An alternative approach has emerged, in the absence of rights being granted in relation to the environment, whereby victims bring claims on the basis that personal or property rights have been violated.⁶⁶ A series of judgments by the European Court of Human Rights illustrates how such a claim might now be made, although it is apparent that each case must be taken on its own merits.⁶⁷ In *Arrondelle v. United Kingdom*, Article 8 of the 1950 ECHR and Article 1 of the First Protocol to the ECHR provided the basis for a 'friendly settlement' between the parties in a complaint alleging nuisance due to the development of an airport and construction of a motorway adjacent to the applicant's home.⁶⁸

In *Powell and Rayner v. United Kingdom*, the applicants alleged that the United Kingdom had violated the 1950 ECHR by allowing the operation of Heathrow Airport, under whose flight path they lived, to generate excessive levels of aircraft noise. The relevant parts of the case were based on Article 8 of the ECHR, which provides that, inter alia, 'everyone has the right to respect for his private . . . life [and] his home . . . and there shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of the economic well-being of the country'.⁶⁹ The Court rejected the applicant's argument, noting that its task was to strike 'a fair balance . . . between the competing interests of the individual and the community as a whole'. In this case, that balance had not been upset: while the quality of life of the applicants had been adversely affected, the Court recognised that large international airports were necessary in the interests of a country's economic well-being. Heathrow was a major artery for international trade and the United Kingdom government had taken significant measures to abate noise pollution, taking account of international standards, had provided some compensation to nearby residents, and taken other regulatory measures. The Court ruled that it could not 'substitute for the assessment of the national authorities any other assessment of what might be the best policy in this difficult social and technical sphere. This is an area where the contracting states are to be recognised as enjoying a wide margin of appreciation'.⁷⁰ The judgment reflected a reluctance to allow environmental concerns of a private person to take precedence over the broader economic concerns of

⁶⁵ Application No. 7407/76, Decision of 13 May 1976 on the admissibility of the application, 15 DR 161.

⁶⁶ Claims of violation of ECHR rights on this basis have also been raised before national European courts, as in the Dutch case of *Stichting Urgenda v. Government of the Netherlands (Ministry of Infrastructure and the Environment)*, ECLI:NL:RBDHA:2015:7145, Rechtbank Den Haag, C/09/456689/HA ZA 13-1396.

⁶⁷ The relevant case law of the European Court of Human Rights is usefully summarised in Council of Europe, *Manual on Human Rights and the Environment* (2012, 2nd edn), available at www.coe.int/t/dghl/standardsetting/hrpolicy/Other_issues/Environment/Environment_en.asp. See also D. Lassalle et al., Individual Report on the European Convention on Human Rights and the European Union, Report No. 14, Prepared for the Independent Expert on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy, and Sustainable Environment, December 2013.

⁶⁸ Application No. 7889/77, Report of 13 May 1983, 26 DR 5.

⁶⁹ *Powell and Rayner v. United Kingdom* (1990) 12 EHRR 355, Judgment of 21 February 1990, para. 37.

⁷⁰ *Ibid.*, para. 44.

the wider community, particularly where, as in this case, the government was able to point to its compliance with international standards concerning noise from aircraft.

Since *Powell and Rayner*, however, the European Court of Human Rights has shown a greater openness to environmental claims, particularly in cases involving Article 8 claims to the effect that a correct balance has not been struck between individual and community interests. The leading, early decision was *Lopez Ostra v. Spain*.⁷¹ Mrs Lopez Ostra lived twelve metres from a plant treating liquid and solid wastes, which had been built on municipal land with the support of a state subsidy and had operated without a relevant licence. The plant gave off fumes that caused a nuisance to Mrs Lopez Ostra and her daughter and caused them to temporarily leave their home. Having failed in proceedings in Spain, she brought proceedings before the European Court of Human Rights on the grounds that she was the victim of a violation of the right to respect for her home that made her private and family life impossible (Article 8), and the victim also of degrading treatment. The Court found that the situation which resulted was the result of the inaction of the state, having been prolonged by the municipality's and the relevant authorities' failure to act.⁷² The Court said:

Naturally, severe environmental pollution may affect individuals' well-being and prevent them from enjoying their homes in such a way as to affect their private and family life adversely, without, however, seriously endangering their health. Whether the question is analysed in terms of a positive duty on the State – to take reasonable and appropriate measures to secure the applicant's rights . . . – . . . or in terms of an 'interference by a public authority' to be justified . . . the applicable principles are broadly similar. In both contexts regard must be had to the fair balance that has to be struck between the competing interests of the individual and of the community as a whole, and in any case the State enjoys a certain margin of appreciation.⁷³

The Court found that the plant caused nuisance and serious health problems and that Spain had not succeeded in striking a fair balance between the interest of the town's economic well-being – that of having a waste-treatment plant – and the applicant's effective enjoyment of her right to respect for her home and her private and family life.⁷⁴

The judgment opened the door to further cases.⁷⁵ In *Guerra and others v. Italy*, the applicants were citizens living near to a factory that produced fertilisers, released large quantities of inflammable gas and other toxic substances into the atmosphere, and (in 1976) had been the source of an explosion releasing arsenic trioxide and causing 150 people to be hospitalised with acute arsenic poisoning. The applicants wanted information on the activities of the plant, and this was not made available to them until after production of fertilisers had ceased. The Court ruled that the 'direct effect of the toxic emissions on the applicants' right to respect for their private and family life made Article 8 applicable', that Article 8 imposed 'positive obligations' on the state to ensure 'effective respect for private or family life', and that, by allowing the

⁷¹ *Lopez Ostra v. Spain* (1995) 20 EHRR 277, Judgment of 9 December 1994. ⁷² *Ibid.*, para. 40. ⁷³ *Ibid.*, para. 51.

⁷⁴ *Ibid.*, paras. 51–8. The Court awarded damages of 4 million pesetas plus costs.

⁷⁵ See e.g. *Bacila v. Romania*, 19234/04 (ECtHR, 30 March 2010); *Dubetska & Ors v. Ukraine*, 30499/03 (ECtHR, 10 February 2011) (pollution from coal mine); *Di Sarno & Ors v. Italy*, 30765/08 (ECtHR, 10 January 2012) (accumulation of waste and refuse).

applicants to wait for essential information that would have enabled them to assess the risks they and their families might run if they continued to live near the factory, Italy had not fulfilled its obligations under Article 8.⁷⁶

In *Hatton and Others v. United Kingdom*, the European Court of Human Rights revisited the issues raised in *Powell and Rayner*, although this time in the context of noise levels at Heathrow Airport arising from night flights between 4 am and 7 am. The Court concluded that there had been a violation of Article 8 because, in the absence of any serious attempt to evaluate the extent or impact of the interferences with the applicants' sleep patterns, and generally in the absence of a prior specific and complete study with the aim of finding the least onerous solution as regards human rights, the government had not struck the right balance in weighing the interferences of the rights of the individuals against the unquantified economic interest of the country.⁷⁷ The judgment suggested the need to carry out a prior assessment of the human rights impact of economically beneficial measures, where environmental interests are concerned.⁷⁸

The case was subsequently appealed to the Grand Chamber, which overturned the Chamber's decision and held that the authorities had not overstepped their margin of appreciation and Article 8 had not been violated.⁷⁹ The Grand Chamber considered that the government had struck a fair balance, noting: that the policy on night flights was in accordance with domestic law; the difficulty in establishing the effects of the policy; the contribution of the night flights to the general economy; the existence of measures to mitigate effects of the noise in general; and the fact that the limited number of people affected could move away from the area without financial loss.⁸⁰ It emphasised that Article 8 allows for restrictions on economic grounds, but that in assessing the action of states within their margin of appreciation it 'would not be appropriate for the Court to adopt a special approach in this respect by reference to a special status of environmental human rights'.⁸¹

The Court has also been willing to recognise the need for environmental protection measures even where they might limit the enjoyment of private property rights.⁸² In *Fredin v. Sweden*, the

⁷⁶ *Guerra and Others v. Italy* (1999) 26 EHRR 357, Judgment of 19 February 1998, at paras. 57–8 and 60. The Court awarded 10 million lire to each applicant in damages. The Court found, however, that there was no violation of Art. 10.

⁷⁷ *Hatton and Others v. United Kingdom*, Judgment of 8 July 2003, ECHR Grand Chamber (2003) 37 EHRR 28 (overturning Chamber judgment (2002) 34 EHRR 1), para. 106. See also the Separate Opinion of Judge Costa: '[H]aving regard to the Court's case law on the right to a healthy environment . . . maintaining night flights at that level meant that the applicants had to pay too high a price for an economic well-being, of which the real benefit, moreover, is not apparent from the facts of the case. Unless, of course, it is felt that the case law goes too far and overprotects a person's right to a sound environment. I do not think so. Since the beginning of the 1970s, the world has become increasingly aware of the importance of environmental issues and of their influence on people's lives. Our Court's case law has, moreover, not been alone in developing along those lines. For example, Article 37 of the Charter of Fundamental Rights of the European Union of 18 December 2000 is devoted to the protection of the environment. I would find it regrettable if the constructive efforts made by our Court were to suffer a setback.'

⁷⁸ On the need to conduct environmental impact assessments, see generally Chapter 14.

⁷⁹ *Hatton and Others v. United Kingdom*, Grand Chamber, Judgment of 8 July 2003, ECHR Grand Chamber (2003) 37 EHRR 28, paras. 129–30.

⁸⁰ *Ibid.*, paras. 102–27.

⁸¹ *Ibid.*, paras. 121–2. Of interest also is the Joint Dissenting Opinion of Judges Costa, Ress, Türmen, Zupanec and Steiner, who advanced the argument that the Court protects a right to a healthy environment within Art. 8. This stands in contrast to the Court's assertion that, although the Convention may offer protection in specific cases where an individual is directly and seriously affected, '[t]here is no explicit right in the Convention to a clean and quiet environment' (para. 96 of the Judgment).

⁸² See the approach taken by various ICSID and NAFTA arbitral tribunals in relation to expropriation cases (see generally Chapter 14).

Court recognised ‘that in today’s society the protection of the environment is an increasingly important consideration’, and held that on the facts the interference with a private property right to achieve environmental objectives was not inappropriate or disproportionate in the context of Article 1 of the First Protocol to the ECHR.⁸³ In *Pine Valley Development Ltd and Others v. Ireland*, the Court recognised that an interference with the right to peaceful enjoyment of property, which was in conformity with planning legislation and was ‘designed to protect the environment’, was clearly a legitimate aim ‘in accordance with the general interest’ for the purposes of the second paragraph of Article 1 of the First Protocol to the ECHR.⁸⁴ Moreover, the interference, in the form of a decision by the Irish Supreme Court, which was intended to prevent building in an area zoned for further agricultural development so as to preserve a green belt, had to be regarded as ‘a proper way – if not the only way – of achieving that aim’ and could not be considered as a disproportionate measure giving rise to a violation of Article 1 of the First Protocol.⁸⁵ In *Hamer v. Belgium*, the Court ruled that national authorities that have put environmental protection measures in place have an obligation not to deprive them of useful effect. It emphasised that economic considerations and even certain fundamental rights must not have primacy over considerations of environmental protection, which in that case concerned the regulation of forests.⁸⁶ In the context of criminal law, the *Mangouras v. Spain* case – related to the criminal proceedings against the Master of the *Prestige* in the aftermath of the oil spill incident – reflected the Court’s environmental concerns. The Court found that, when establishing bail, the ‘disastrous environmental consequences’ of the *Prestige* accident was one of the factors to be taken into account in the context of the seriousness of the offence.⁸⁷

The Inter-American Commission on Human Rights has shown itself equally willing to find a violation of ‘environmental’ rights, but pre-dating the European Court in its approach. In the *Yanomami* case, the Commission concluded that the ecological destruction of Yanomami lands in Brazil had caused violations of the right to life, health and food under the American Declaration of the Rights and Duties of Man.⁸⁸ In *San Mateo de Huanchor v. Peru*, relating to pollution from a field of toxic waste sludge, the Commission adopted precautionary measures requiring an environmental impact assessment for the removal of the sludge, its transfer in light of the outcome of the assessment, and the establishment of medical care for the local community.⁸⁹ In *Kuna of*

⁸³ Judgment of 18 February 1991, ECHR Ser. A No. 192, 14, para. 48; *Oerlemans v. Netherlands*, Judgment of 27 November 1991, ECHR Ser. A No. 219.

⁸⁴ (1991) 14 EHRR 319, Judgment of 29 November 1991 (or ECHR Ser. A No. 222), paras. 54 and 57. See *Matos e Silva v. Portugal*, Judgment of 16 September 1996 (finding a violation of Art. 1 of Protocol 1 where there had been no formal or de facto expropriation, since the measures to create a nature reserve for animals had serious and harmful effects that hindered the applicants’ enjoyment of their property right for more than thirteen years, creating uncertainty as to what would become of the possessions and as to the question of compensation, and upsetting the balance between the requirements of the general interest and the protection of property rights).

⁸⁵ *Ibid.*, para. 59.

⁸⁶ *Hamer v. Belgium*, Judgment of 27 November 2007, ECHR Application No. 21861/03, para. 79; *Turgut and Others v. Turkey*, Judgment of 8 July 2008, ECHR Application No. 1411/03, para. 90.

⁸⁷ *Mangouras v. Spain*, ECHR Application No. 12050/04, Grand Chamber, Judgment of 28 September 2010, para. 92. The bail in question was set at €3 million.

⁸⁸ Case No. 7615 of 5 March 1985, Annual Report of the Inter-American Commission on Human Rights, OAS Doc.OEA/Ser.L/V/II.66, Doc. 10 rev.1, 24 (1985), cited in Earthjustice Legal Defense Fund, ‘Human Rights and the Environment’ (Issue Paper) (December 2001).

⁸⁹ Case 12.471, Admissibility Decision of 15 October 2004, para. 12; see further pp. 826–7, for the requirement relating to environmental impact assessments and other procedural obligations.

Madungandí and Emberá of Bayano Indigenous Peoples and Their Members v. Panama the Commission summarised its position as follows:

[A]lthough neither the American Declaration of the Rights and Duties of Man nor the American Convention on Human Rights includes any express reference to the protection of the environment, it is clear that several fundamental rights enshrined therein require, as a precondition for their proper exercise, a minimal environmental quality, and suffer a profound detrimental impact from the degradation of the natural resource base. The IACHR has emphasized in this regard that there is a direct relationship between the physical environment in which persons live and the rights to life, security, and physical integrity. These rights are directly affected when there are episodes or situations of deforestation, contamination of the water, pollution, or other types of environmental harm on their ancestral territories.⁹⁰

The Inter-American Court of Human Rights has likewise recognised the ‘undeniable link between the protection of the environment and the enjoyment of other human rights.’⁹¹ In *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, the Inter-American Court of Human Rights found that the grant of a logging concession violated property rights (Article 21 of the ACHR) of an indigenous community, adopting an approach analogous to that taken by the European Court.⁹² In *Saramaka People v. Suriname*, which also concerned the rights of indigenous peoples, the Court emphasised the importance of participation, consultation, environmental impact assessments, access to information and prior informed consent in the context of restrictions of their rights to property.⁹³ The link between environmental degradation and the human rights of particularly vulnerable groups has also been taken by the Committee on the Elimination of Discrimination Against Women⁹⁴ and by the Committee on the Rights of the Child.⁹⁵

The Committee of Independent Experts established under the 1961 European Social Charter (ESC), which considers national reports under the Charter, has recognised the relationship between the state of the environment and the safeguarding of rights guaranteed under the Charter. The Committee has taken into account national measures to prevent, limit or control

⁹⁰ *Kuna of Madungandí and Emberá of Bayano Indigenous Peoples and Their Members v. Panama*, 30 November 2012, IACHR Merits Report No. 125/12, Case 12.354, para. 233. See also IACHR *Second Report on the Situation of Human Rights Defenders in the Americas*, 31 December 2011, OEA/Ser.L/V/II, Doc. 66, para. 309.

⁹¹ *Kawas-Fernández v. Honduras*, 3 April 2009 Merits, Reparations, and Costs, Judgment (Ser. C No. 196), para. 148.

⁹² *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, Inter-American Court of Human Rights, Judgment of 31 August 2001, Series C No. 79 (2001). On the link between indigenous peoples’ rights and environmental protection, see also *Indigenous Community Yakye Axa v. Paraguay*, 17 June 2005, Merits, Reparations, and Costs Judgment (Series C No. 125) and *Case of the Indigenous Community Sawhoyamaxa*, Merits, Reparations, and Costs Judgment, 29 March 2006, Series C No. 146.

⁹³ *Saramaka People v. Suriname*, Judgment of 28 November 2007, Series C No. 172, paras. 129, 133 and 134. See also the African Commission on Human and Peoples’ Rights, *Centre for Minority Rights Development (Kenya) and Minority Rights Group International on behalf of Endorois Welfare Council v. Kenya*, Communication 276/2003, May 2009, paras. 226–8.

⁹⁴ See e.g. Concluding Observations on Romania, UN Doc. CEDAW/C/2000/II/Add.7, para. 38 (2000) ([t]he Committee expresses its concern about the situation of the environment, including industrial accidents, and their impact on women’s health’).

⁹⁵ See e.g. Concluding Observations on South Africa, UN Doc. CRC/C/15/Add.122, para. 30 (2000) (‘Le Comité fait part de son inquiétude devant l’aggravation de la dégradation écologique, en particulier en ce qui concerne la pollution atmosphérique. Le Comité recommande à l’Etat partie d’intensifier ses efforts pour favoriser la mise en oeuvre de programmes de développement durable afin de prévenir la dégradation écologique, en particulier la pollution atmosphérique’).

pollution in considering compliance with the obligation to ensure the right to the highest attainable standard of health under Article 11 of the ESC.⁹⁶ In *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, claimants alleged that Greece was not protecting its citizens from air pollution 'in accordance with Article 11(1) of the Charter, by authorising the Public Power Corporation (DEH) to operate lignite mines and power stations fuelled by lignite, without taking sufficient account of the environmental impact and without taking all necessary steps to reduce this impact.'⁹⁷ The Committee stated that it had 'taken account of the growing link that states party to the Charter and other international bodies . . . now make between the protection of health and a healthy environment, and has interpreted Article 11 of the Charter (right to protection of health) as including the right to a healthy environment.'⁹⁸

In the *Ogoniland* case before the African Commission on Human and Peoples' Rights, the Ogoni Communities in Nigeria alleged environmental degradation and health problems resulting from an oil consortium's contamination of the environment. The Commission stated that Article 16 (right to health) and Article 24 (right to a general satisfactory environment) of the African Charter 'recognise the importance of a clean and safe environment that is closely linked to economic and social rights in so far as the environment affects the quality of life and safety of the individual.'⁹⁹ Moreover, the Commission found that 'Governments have a duty to protect their citizens, not only through appropriate legislation and effective enforcement but also by protecting them from damaging acts that may be perpetrated by private parties', and held that by allowing oil companies 'to devastatingly affect the well-being of the Ogonis', Nigeria 'falls short of the minimum conduct expected of governments.'¹⁰⁰

Civil and Political Rights

Civil and political rights are equally capable of creating practical and enforceable obligations in relation to environmental and related matters. Indeed, much of the case law discussed above has derived substantive environmental protections from civil and political rights relating to life, privacy and property. Civil and political rights and obligations are established by several environmental treaties and other international instruments at the global and regional levels. Civil and political rights which are relevant to environmental protection include: the right to life;¹⁰¹ the prohibition of cruel, inhuman or degrading treatment;¹⁰² the right to equal protection

⁹⁶ Individual Report on the Asia-Pacific, Arab and African Regions as well as the European Social Charter, Report No. 12, Prepared for the Independent Expert on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy, and Sustainable Environment, Dec. 2013. See also R. J. Dupuy (ed.), *The Right to Health as Human Right* (Alphen aan den Rijn: Sijthoff & Noordhoff, 1979).

⁹⁷ *Marangopoulos Foundation for Human Rights v. Greece*, Complaint No. 30/2005 (European Social Committee 2006), para. 11.

⁹⁸ *Ibid.*, para. 195. The Committee reaffirmed this conclusion in *International Federation for Human Rights (FIDH) v. Greece*, Complaint No. 72/2011 (European Social Committee 2013).

⁹⁹ *Social and Economic Rights Action Centre and another v. Federal Republic of Nigeria*, Communication 155/96 (African Commission on Human and Peoples' Rights 2001), available at www.cesr.org/downloads/AfricanCommissionDecision.pdf (*Ogoniland* case), para. 2. See also *SERAP v. Nigeria*, No. ECW/CCJ/JUD/18/12 (ECOWAS Court of Justice 2012), para. 96.

¹⁰⁰ *Ibid.*, paras. 57–8.

¹⁰¹ 1966 ICCPR, Art. 6(1); 1950 ECHR, Art. 2(1); 1969 ACHR, Art. 4(1); 1981 African Charter, Art. 4; 2004 Arab Charter, Art. 5.

¹⁰² 1966 ICCPR, Art. 7; 1950 ECHR, Art. 3; 1969 ACHR, Art. 5(2); 1981 African Charter, Art. 5; 2004 Arab Charter, Art. 8.

against discrimination;¹⁰³ the right to an effective remedy by competent national tribunals for acts violating fundamental rights;¹⁰⁴ freedom of expression¹⁰⁵ and the right to receive information;¹⁰⁶ the right to a fair and public hearing by an independent and impartial tribunal in the determination of rights and obligations;¹⁰⁷ the right to protection against arbitrary interference with privacy and the home;¹⁰⁸ the prohibition of arbitrary deprivation of property;¹⁰⁹ the right to take part in the conduct of public affairs;¹¹⁰ and the right of members of ethnic minorities to enjoy their own culture in community with other members of their group.¹¹¹

The case law of the European Court readily illustrates the breadth of issues that potentially fall under these provisions, invariably in relation to 'procedural rights'. The Court has identified rights to participation, information and access to justice under both Article 2 (right to life)¹¹² and Article 8 (right to privacy)¹¹³ of the Convention.¹¹⁴ The issue of environmental impact assessments (EIAs) has also featured. The Court has held, for example, that 'appropriate studies and investigations' must be carried out to assess harmful effects on the environment and infringement of individual rights, to enable decision-makers to strike the right balance between interests at stake.¹¹⁵ Additionally, in *Tătar v. Romania*, the Court invoked the precautionary principle to justify its finding that Article 8 of the ECHR had been violated.¹¹⁶

The Inter-American Court of Human Rights has similarly developed the notion of procedural rights in its case law. In *San Mateo de Huanchor v. Peru* it required an environmental impact assessment to be carried out.¹¹⁷ The Inter-American Court has also considered environmental

¹⁰³ 1948 UDHR, Art. 7; 1966 ICCPR, Art. 3; 1969 ACHR, Art. 24; 1981 African Charter, Art. 3(2); 2004 Arab Charter, Art. 11; see also H. Smets, 'Le Principe de Non Discrimination en Matière de Protection de l'Environnement', 2 *Revue Européenne de Droit de l'Environnement* 1 (2000).

¹⁰⁴ 1948 UDHR, Art. 8; 1950 ECHR, Art. 13; 1969 ACHR, Art. 25; 1981 African Charter, Arts. 7(1) and 26; 2004 Arab Charter, Art. 12.

¹⁰⁵ See e.g. *Bladet Tromsø and Stensaas v. Norway* (2000) 29 EHRR 125 (newspapers' freedom under Art. 10 of the ECHR to publish environmental information (regarding the consequences of seal-hunting) of local, national and international interest).

¹⁰⁶ 1981 African Charter, Art. 9(1); see further Chapter 15, especially pp. 707–8. Note that, in *Guerra and Others v. Italy*, pp. 821–2 the European Court did not find a violation of Art. 10 of the ECHR.

¹⁰⁷ 1948 UDHR, Art. 10; 1966 ICCPR, Art. 14(1); 1950 ECHR, Art. 6(1).

¹⁰⁸ 1948 UDHR, Art. 12; 1966 ICCPR, Art. 17; 1950 ECHR, Art. 8(1) (see *Powell and Rayner*, ECHR (1990) Ser. A No. 172); 1969 ACHR, Art. 11; 2004 Arab Charter, Art. 21.

¹⁰⁹ 1948 UDHR, Art. 17; 1950 ECHR, First Protocol, Art. 1; 1969 ACHR, Art. 21; 1981 African Charter, Art. 14; 2004 Arab Charter, Art. 31.

¹¹⁰ 1966 ICCPR, Art. 25; 1969 ACHR, Art. 23; 1981 African Charter, Art. 13.

¹¹¹ 1966 ICCPR, Art. 27. See *Bernard Ominayak and the Lubicon Band v. Canada*, Communication No. 167/1984, Decisions of the Human Rights Committee, UN Doc. CCPR/C/38/D/167/1984 (1990); Communication No. 511/1992, *Ilmari Lansman et al. v. Finland*, Human Rights Committee, Final Decisions, 74, CCPR/C/57/1 (1996).

¹¹² See e.g. *Oneryıldız v. Turkey* (2005) 41 EHRR 325, Grand Chamber, Judgment of 30 November 2004, para. 94 (in the context of a gas explosion at a waste tip); *Budayeva v. Russia* [2008] ECHR 15339/02, Judgment of 20 March 2008, para. 132 (in the context of mudslides); *Kolyadenko & Ors v. Russia* ECtHR, 28 February 2012, 17423/05, 20534/05, 20678/05, 23263/05, 24283/05 and 35673/05 (in the context of flash flooding and failure to maintain a river channel).

¹¹³ See e.g. *Taşkin and Others v. Turkey* (2006) 42 EHRR 50, Judgment of 10 November 2004, paras. 118–19; *Giacomelli v. Italy* (2006) 45 EHRR 871, Judgment of 2 November 2006, paras. 83–4; and *Tătar v. Romania*, ECHR 67021/01, Judgment of 27 January 2009, paras. 98 and 101.

¹¹⁴ The Court also has made express reference to the Aarhus Convention, for instance in *Tătar v. Romania*, ECHR 67021/01, Judgment of 27 January 2009, para. 118.

¹¹⁵ See *Taşkin and Others v. Turkey*, para. 118; *Öçkan and Others v. Turkey* [2006] ECHR 46771/99, Judgment of 28 March 2006, para. 43; and *Brândușe v. Romania* [2009] ECHR 6586/03, Judgment of 7 April 2009, para. 63.

¹¹⁶ *Tătar v. Romania*, ECHR 67021/01, Judgment of 27 January 2009, para. 109.

¹¹⁷ Case 504/03, Report No. 69/04, Inter-American Court of Human Rights, OEA/Ser.L/V/II.122 Doc. 5 rev. 1 at 487 (2004).

information to be within the scope of Article 13 of the ACHR.¹¹⁸ In relation to indigenous rights, in *Samaraka v. Suriname*, the Court upheld rights of participation, consultation and information, as well as an obligation to carry out an environmental impact assessment.¹¹⁹

The 1989 Indigenous Peoples Convention illustrates the relationship between civil and political rights and environmental issues in that context.¹²⁰ Among the numerous obligations established or recognised by the Convention for indigenous and tribal peoples are environmental and other impact assessment and the right of such peoples to determine their own economic, social and cultural development, the right to be consulted and to participate in decision-making and to take legal proceedings to safeguard against the abuse of their rights.¹²¹ The 1989 Indigenous Peoples Convention illustrates the limitations of the traditional approach of other instruments such as the European Convention on Human Rights. In *X v. Federal Republic of Germany*, the European Commission on Human Rights rejected as ‘manifestly ill-founded’ a claim by an environmental association that Article 11 of the ECHR entitled it to have *locus standi* in administrative court actions to challenge a decision to construct a nuclear power plant; the Commission held that the ECHR does not require that associations be granted the right to institute legal proceedings pursuant to their statutory aims without having to show a legal interest of their own in the matter.¹²²

Many of the principles set out in the 1992 Rio Declaration and the 1972 Stockholm Declaration, which reflect state practice at the global and regional levels, will be familiar to human rights lawyers who have worked on civil and political rights. One of the central themes at UNCED was the recognition that individuals will need to participate fully to ensure the implementation of the global sustainable development agenda. In supporting the participation of all concerned citizens at the relevant level, the Rio Declaration called for: the right of access to environmental information;¹²³ the right to participate in decisions which affect their environment;¹²⁴ the right of effective access to judicial and administrative proceedings, including redress and remedy;¹²⁵ a right to development to meet environmental needs;¹²⁶ and the rights flowing from the recognition of the need to ensure the full participation of women, youth and indigenous peoples and other communities.¹²⁷ The case law of the European and Inter-American human rights courts and the adoption of instruments such as the 1998 Aarhus Convention indicate the entrenchment of this approach, particularly as efforts to focus on the enforcement of environmental standards are stepped up.¹²⁸

¹¹⁸ *Claude-Reyes et al. v. Chile*, 2006 Inter-American Court of Human Rights (Ser. C) No. 151, Judgment of 19 September 2006, paras. 76–7, 99 and 103.

¹¹⁹ See n. 93.

¹²⁰ See generally W. Shutkin, ‘International Human Rights Law and the Earth: The Protection of Indigenous Peoples and the Environment’, 31 *Virginia Journal of International Law* 479 (1991); A. Meyer, ‘International Environmental Law and Human Rights: Towards the Explicit Recognition of Traditional Knowledge’, 10 *Review of European Community and International Environmental Law* 37 (2001).

¹²¹ Arts. 6, 7 and 11.

¹²² Application No. 9234/81, Decisions of 14 July 1981, 26 DR 270. See also *Balmer-Schafroth v. Switzerland* (1998) 25 EHRR 598 and *Caron and Others v. France*, Decision of 29 June 2010 [2010] ECHR 48629/08 (where the Court emphasised that the Convention does not provide for an *actio popularis*).

¹²³ Principle 10; Chapter 15, p. 707. ¹²⁴ Principle 10, see generally Chapter 15, pp. 707–8.

¹²⁵ *Ibid.*, Chapter 5, pp. 153ff. ¹²⁶ Principle 3. ¹²⁷ Principles 20–22.

¹²⁸ On the 1998 Aarhus Convention, see Chapter 5, p. 149 (access to justice), and Chapter 15, pp. 710–12 (environmental information and participation in decision-making).

INTERNATIONAL HUMANITARIAN LAW

Situations of armed conflict provide a particularly acute setting for examining the interrelationship of the environment with other areas of international law, including human rights and the laws of war (international humanitarian law).¹²⁹ Military activities undertaken during a war or in preparation for armed conflict may have significant impacts upon the environment. Preparations, including the testing, development, production and maintenance of conventional, chemical, biological and nuclear weapons, have generated large quantities of hazardous, toxic and radioactive substances. These, together with their wastes, have contributed on a large scale to the depletion of natural resources and degradation of the environment. The environmental impacts of military activities are well documented, and conflicts in Vietnam, Afghanistan, the Balkans, the Persian Gulf and the Arabian Peninsula have focused attention on the need to limit these adverse consequences. In another sense, the protection of the environment has even been used as a justification for the use of force: in August 2000, the UN Interim Administration Mission in Kosovo (UNMIK) (assisted by the NATO-led Kosovo Force (KFOR)) took over control of the Zvecan smelter plant in Kosovo 'until air pollution control mechanisms are installed and the affected population tested'.¹³⁰

International law recognises and aims to address the link between military activities and environmental protection. Treaties to protect humans and their property from the effects of military activities also aim to protect the environment, albeit indirectly. More recently, treaties have addressed environmental protection as an end in itself. In this respect, three separate, but related questions arise that are explored in the following sections. First, do the rules of international environmental law operate during times of war and armed conflict? Second, what indirect protection for the environment is afforded by the rules of international law governing war and armed conflict? And, third, to what extent does the international law of war and armed conflict address environmental protection as an end in itself?

Increasingly environmental degradation is viewed not just as a by-product of armed conflict but also as a key contributor to threats to peace and security. In 2007, the UN Security Council held its first-ever debate on climate change and security,¹³¹ which has been followed by other similar discussions such as the Council's 2015 meeting on climate change as a 'threat multiplier' for global security.¹³² A particular concern in this regard has been the potential for large-scale displacement of peoples as their homelands become uninhabitable due to a combination of environmental degradation and armed conflict. The UN Security Council has also recognised the link between the environment and armed conflict in other spheres, such as the series of resolutions it issued in 2014 concerning security threats posed by wildlife poaching and

¹²⁹ See generally K. Hulme, 'Environmental Protection in Armed Conflict', in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (Cheltenham, UK: Edward Elgar, 2010), ch. 27; Dupuy and Viñuales, *International Environmental Law*, ch. 11 ('Environmental Security').

¹³⁰ UNMIK Press Release, 14 August 2000, UNMIK/PR/312 ('[r]ecent tests indicate that current levels of lead exposure are approaching the most extreme in decades. Levels of atmospheric lead measured last month were around 200 times the World Health Organization's acceptable standards'). See also NATO/KFOR Press Release, 14 August 2000.

¹³¹ UN Security Council, Press Release, Security Council Holds First Ever Debate on Impact of Climate Change on Peace, Security, Hearing Over 50 Speakers, SC/9000, 17 April 2007, www.un.org/press/en/2007/sc9000.doc.htm

¹³² Security Council open Arria-formula meeting 30 June 2015, CR-2 UNHQ, 'The role of Climate Change as a threat multiplier for Global Security', Hosted by the Permanent Missions of Spain and Malaysia to the UN, www.spainun.org/climatechange/#prettyPhoto

trafficking.¹³³ The final section of the chapter explores this new area of environmental security in international law, which blends environmental issues with those of human rights and international humanitarian law.

Military Activities and Environmental Protection

This section of the chapter addresses the extent to which international law protects the environment from the consequences of military activities and armed conflict. It addresses three aspects: (1) the applicability of international environmental rules to military activities; (2) the scope for environmental protection offered by general rules of international humanitarian law; and (3) special rules for environmental protection under international humanitarian law treaties. More recently there have also been codification efforts commenced in this area. In 2013, the ILC began work on the topic of ‘Protection of the Environment in Relation to Armed Conflict’ and appointed Marie G. Jacobsson as Special Rapporteur. The Special Rapporteur’s approach to the topic focuses on ‘three temporal phases: before, during and after an armed conflict’.¹³⁴ The Special Rapporteur’s work will deal particularly with the pre- and post-conflict phases of armed conflict and also encompass non-international armed conflicts. However, the Special Rapporteur has indicated that her reports will not address questions such as environment-driven conflict, the protection of cultural property during armed conflict, the regulation of weapons and environment-driven displacement.¹³⁵

International Environmental Law During War and Armed Conflict

One of the central questions that arises at the interface of international environmental and international humanitarian law concerns the applicability of the various rules of international environmental law to military activities, including preparatory activities. The general rules of public international law provide little guidance as to the legal validity and consequences of those treaties following the outbreak of military hostilities.¹³⁶ The validity and effect of a particular treaty during war and/or armed conflict will often turn on the terms of the treaty itself. The general instruments of international environmental law and policy also fail to provide any guidance on this question. The 1972 Stockholm Declaration focused exclusively on nuclear weapons. Principle 26 provides that:

Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.

The 1982 World Charter for Nature adopted a more general approach, stating the ‘general principle’ that ‘[n]ature shall be secured against degradation caused by warfare or other hostile

¹³³ S/RES/2134 (28 January 2016); S/RES/2136 (30 January 2016).

¹³⁴ Preliminary Report on the Protection of the Environment in Relation to Armed Conflicts, submitted by Marie G. Jacobsson, Special Rapporteur, 30 May 2014, A/CN.4/674, para. 58.

¹³⁵ *Ibid.*, paras. 64–7.

¹³⁶ e.g. Art. 73 of the 1969 Vienna Convention: ‘[T]he present Convention shall not prejudice any question that may arise in regard to a treaty from . . . the outbreak of hostilities between States’.

activities', and declaring that 'military activities damaging to nature shall be avoided'.¹³⁷ The wording of the 1992 Rio Declaration got closer to the point, but was still ambiguous, stating in Principle 24 that:

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in time of armed conflict and co-operate in its further development, as necessary.

Although not legally binding, the wording of Principle 24 could either be interpreted as requiring states to respect those rules of international law which provide protection for the environment in times of armed conflict, or as requiring states to respect international law by protecting the environment in times of armed conflict.¹³⁸

Most environmental treaties are silent on the issue of their applicability following the outbreak of military hostilities. Some, including those on civil liability for damage, include provisions excluding their applicability when damage occurs as a result of war and armed conflict.¹³⁹ Others include provisions allowing for total or partial suspension at the instigation of one of the parties,¹⁴⁰ while yet others require the consequences of hostilities to influence decision-making in the application of the treaty by its institutions.¹⁴¹ Some treaties do not apply to military activities even during peacetime operations,¹⁴² while others are specifically applicable to certain activities that may be associated with hostilities.¹⁴³ Finally, the terms and overall purpose of some treaties make it abundantly clear that they are designed to ensure environmental protection at all times.¹⁴⁴ The 1997 Watercourses Convention adopts a different approach, making a *renvoi* to international humanitarian law: its Article 29 provides that: 'International watercourses and related installations, facilities and other works shall enjoy the protection accorded by the

¹³⁷ Paras. 5 and 20.

¹³⁸ See Eritrea Ethiopia Claims Commission, *Final Award – Pensions: Eritrea's Claims 15, 10 and 23* (19 December 2005), RIAA, vol. XXVI, 471.

¹³⁹ 1960 Paris Convention, Art. 9; 1963 Vienna Convention, Art. IV(3)(a); 1992 CLC, Art. III(2)(a); 1992 Oil Pollution Fund Convention, Art. 4(2)(a) (no liability attached to the Fund for damage from oil from warships used on non-commercial service); 1977 Civil Liability Convention, Art. 3(3); 1988 CRAMRA, Art. 8(4)(b) (if no reasonable precautionary measures could have been taken); 1999 Basel Liability Protocol, Art. 4(5)(a); 2003 Liability Protocol to the Industrial Accidents and Watercourses Conventions, Art. 4(2)(a); 2010 Nagoya-Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol, Art. 6(1).

¹⁴⁰ 1954 Oil Pollution Convention, Art. XIX(1), allowing parties to suspend operation of whole or part of the Convention in case of war or other hostilities if they consider themselves affected as a belligerent or as a neutral, upon notification to the Convention's Bureau.

¹⁴¹ 1952 North Pacific Fisheries Convention, which provides that Commission decisions should make allowance for, inter alia, wars which may introduce temporary declines in fish stocks (Art. IV(2)). Article 11(4) of the 1972 World Heritage Convention provides that the World Heritage Committee shall keep a 'List of World Heritage in Danger', which can include properties threatened by serious and specific dangers such as 'the outbreak of the threat of an armed conflict'.

¹⁴² 1996 London Protocol, Art. 10(4) (non-applicability of the Convention to vessels and aircraft entitled to sovereign immunity under international law).

¹⁴³ 1976 Barcelona Protocol, which generally prohibits the dumping of materials produced for biological and chemical warfare (Annex 1, Section A, para. 9); and 1986 Noumea Protocol, which prohibits special dumping permits from being granted in respect of materials produced for biological and chemical warfare (Art. 10(1) and (2) and Annex I, Section A, para. 6).

¹⁴⁴ 1959 Antarctic Treaty, Art. I(1); 1988 CRAMRA, Art. 2.

principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.’¹⁴⁵

The relevance of customary and conventional rules of international environmental law during armed conflict was addressed in the proceedings relating to the ICJ’s Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*. A number of non-nuclear-weapons states argued that multilateral environmental agreements and the rule reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration applied in times of armed conflict and governed the use of nuclear weapons.¹⁴⁶ Without addressing the general question of the applicability of multilateral environmental agreements during conflict, some nuclear weapons states argued that such agreements (as well as Principle 21/Principle 2) could not be construed as prohibiting the threat or use of nuclear weapons because they did not address nuclear weapons per se and could not be construed as containing an implied prohibition on their use.¹⁴⁷ With regard to treaties, the ICJ sidestepped the differences of view, stating that the issue was not whether they ‘are or are not applicable during armed conflict, but rather whether the obligations stemming from these treaties were intended to be obligations of total restraint during military conflict’, and concluding that the treaties in question could not have been ‘intended to deprive a State of the exercise of its right of self-defence under international law because of its obligations to protect the environment’.¹⁴⁸ With regard to the customary norm relating to the protection of the environment, the ICJ indicated that the environmental obligations it referred to in the second New Zealand *Nuclear Tests* case ‘also appl[y] to the actual use of nuclear weapons in armed conflict’.¹⁴⁹ In this way, the ICJ concluded that, although ‘existing international law relating to the protection and safeguarding of the environment does not specifically prohibit the use of nuclear weapons, it indicates important environmental factors that are properly to be taken into account in the context of the implementation of the principles and rules of the law applicable in armed conflict’.¹⁵⁰

The question of whether international environmental and other treaties operate in situations of armed conflict has also been addressed by the ILC in its 2011 Draft Articles on the Effects of Armed Conflict on Treaties.¹⁵¹ In its Draft Articles, the ILC sets out the general principle that armed conflict does not, *ipso facto*, terminate or suspend the operation of treaties (Article 3). Articles 4 to 7 then provide a framework for determining whether a specific treaty survives in an armed conflict. In the first instance, under Article 4, if a treaty contains an express provision regarding its continuity in the context of an armed conflict that provision will apply. If there is no such provision then, pursuant to Article 5, resort should be had to the established international rules of treaty interpretation so as to ascertain the fate of the treaty in the event of an armed conflict. Article 6 provides that where ambiguity remains, regard shall be had to various

¹⁴⁵ See also Article 18 of the ILC Draft Articles on Transboundary Aquifers (2008).

¹⁴⁶ See 5 *Yearbook of International Environmental Law* 540–2 (1995) (Solomon Islands, Mexico, North Korea, Egypt, Iran and Qatar).

¹⁴⁷ *Ibid.* (United Kingdom, United States and France).

¹⁴⁸ (1996) ICJ Reports 242, para. 30. It is to be noted that the Court, perhaps deliberately, conflates the distinct concepts of the *ius in bello* and the *ius ad bellum*.

¹⁴⁹ *Ibid.*, 243, para. 32.

¹⁵⁰ *Ibid.*, para. 33. See also para. 30 (‘States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives. Respect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of necessity and proportionality’).

¹⁵¹ 9 December 2011, UNGA Res. 66/99, UN Doc. A/RES/66/99.

external factors in determining whether a treaty is susceptible to termination, withdrawal or suspension in the event of an armed conflict. These factors include: (a) the nature of the treaty, in particular its subject matter, its object and purpose, its content and the number of parties to the treaty; and (b) the characteristics of the armed conflict, such as its territorial extent, its scale and intensity, its duration and, in the case of non-international armed conflict, also the degree of outside involvement. Finally, Article 7 and an accompanying annex provide for an 'indicative list of treaties the subject matter of which involves an implication that they continue in operation, in whole or in part, during armed conflict'. Included in this list are 'treaties relating to the international protection of the environment' and 'treaties relating to international water-courses and related installations and facilities'. Accordingly, the general presumption of the Draft Articles is that environmental treaties will continue in operation during armed conflict, unless the treaty expressly provides otherwise.

International Law of War and Armed Conflict: General Rules of Environmental Protection

The international law of war and armed conflict limits the methods and means of warfare available to states. These rules of treaty and customary law were developed to protect humans and their property, and may only be indirectly protective of an environment that is not intended to be the direct beneficiary of these acts. The 'Martens Clause' provides that, until the adoption of specific regulations, inhabitants and belligerents are 'under the protection and the rule of the principles of the law of nations as they result from the usages established among civilised peoples, from the laws of humanity, and the dictates of public conscience'.¹⁵² In modern international law, there is no reason why these should not encompass environmental protection.

It is now a well-accepted general rule of international law that the methods and means of warfare are not unlimited. Methods and means are limited to activities necessary to achieve military objectives, which prevent unnecessary suffering and superfluous injury, which are proportionate and which respect the rules of international law on neutrality. As early as 1899, states accepted that the 'right of the belligerent to adopt means of injuring the enemy is not unlimited'.¹⁵³ The 1977 Additional Protocol I to the 1949 Geneva Conventions provides that: 'In any armed conflict, the right of the parties to the conflict to choose methods or means of warfare is not unlimited.'¹⁵⁴ As a general rule, the destruction of property is prohibited unless it is rendered absolutely necessary by military operations,¹⁵⁵ as is the use of mines causing long-lasting threats.¹⁵⁶

These general obligations limiting the methods and means of warfare have been supplemented by specific treaty obligations prohibiting certain forms of weaponry and warfare that are

¹⁵² 1907 Hague Convention IV Respecting the Laws and Customs of War on Land, 3 Martens (3rd) 461, Preamble. The 'Martens Clause' may be helpful in extending customary international law obligations to environmental protection objectives, particularly in the context of current efforts to establish the environment as a civilian objective and fundamental human right.

¹⁵³ 1899 Hague Regulations to the International Convention with Respect to the Laws and Customs of War by Land (Hague II), 26 Martens (2nd) 949; and 1907 Hague Convention IV Respecting the Laws and Customs of War on Land, 3 Martens (3rd) 461.

¹⁵⁴ Protocol I (Additional to the 1949 Geneva Conventions), Geneva, 8 June 1977, in force 7 December 1978, 16 ILM 1391 (1977).

¹⁵⁵ 1899 Hague Regulations to the International Convention with Respect to the Laws and Customs of War by Land (Hague II), 26 Martens (2nd) 949, Arts. 23(g) and 55; 1949 Geneva Convention IV, Art. 53.

¹⁵⁶ 1907 Hague Convention VIII on the Laying of Automatic Contact Mines; 19 ILM 1529 (1980); UNGA Res. 37/215 (1982).

particularly harmful to the environment. Although these rules are invariably designed to protect people, rather than the environment, their application could also provide protection to the environment. Under the 1977 Additional Protocol I, parties must assess new weapons and means or methods of warfare to determine whether, in their employment, they would be prohibited by the Protocol or by any other applicable rule of international law.¹⁵⁷ Other treaties prohibit the use of conventional weapons causing excessive injuries or indiscriminate effects,¹⁵⁸ including incendiary weapons,¹⁵⁹ chemical and biological weapons,¹⁶⁰ and nuclear weapons.¹⁶¹ Cultural property is also subject to a regime of special protection.¹⁶² The limited role which such instruments or equivalent rules of customary international law might be able to play was illustrated by the graphic images of the bombardment of Dubrovnik in 1992,¹⁶³ and more recently by acts of destruction of cultural world heritage properties in the Middle East by the Taliban and ISIS.¹⁶⁴

More specific to environmental protection is the prohibition of attacks on works and installations containing dangerous forces, even when they are military objects, if such attacks might cause the release of dangerous forces and consequent severe losses among the civilian population.¹⁶⁵ Dams, dykes and nuclear power plants are specifically identified, although the effectiveness of this provision is limited by the exceptions provided if these types of works and installations are used in regular, significant and direct support of military operations, and if such an attack is the only feasible way to terminate such support.¹⁶⁶ Attacks against such works or installations launched in the knowledge that they will cause excessive loss of life, injury to civilians or damage to civilian objects are regarded as war crimes.¹⁶⁷ The IAEA has called for a prohibition of attacks on nuclear facilities, since they 'could result in radioactive releases with grave consequences',¹⁶⁸ and the International Law Association has declared that international law prohibits the destruction of water installations which 'may involve . . . substantial damage to the basic ecological balance'.¹⁶⁹ The increased importance attached by the international community to the protection of the environment in times of armed conflict has also been reflected in

¹⁵⁷ Art. 36.

¹⁵⁸ 1980 Inhumane Weapons Convention; the Preamble identifies one of the aims as environmental protection.

¹⁵⁹ See Protocol III (Incendiary Weapons) to the 1980 Inhumane Weapons Convention, which prohibits making forest or other plant cover the object of attack unless used to cover, conceal or camouflage military objectives (Art. 2(4)).

¹⁶⁰ 1925 Geneva Protocol; 1972 Biological and Toxic Weapons Convention. See also the Convention on the Prohibition of the Development, Production and Stockpiling and Use of Chemical Weapons and on Their Destruction, Paris, 13 January 1993, in force 29 April 1997, GAOR Supp. 47th Sess., Supp. No. 27 (A/47/27), Appendix I.

¹⁶¹ Chapter 16, pp. 601–3.

¹⁶² Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, 14 May 1954, 249 UNTS 215.

¹⁶³ The Old City of Dubrovnik is listed under the 1972 World Heritage Convention as a World Heritage Site.

¹⁶⁴ See F. Francioni and F. Lenzerini, 'The Destruction of the Buddhas of Bamiyan and International Law', 14(4) *European Journal of International Law* 619 (2003); D. W. Bowker, L. Goodall and R. A. Haciski, 'Confronting ISIS's War on Cultural Property', *ASIL Insights* 20(12) 2016, available at www.asil.org/insights/volume/20/issue/12/confronting-isis-war-cultural-property

¹⁶⁵ 1977 Additional Protocol I, Art. 56(1); 1977 Additional Protocol II, Art. 15.

¹⁶⁶ 1977 Additional Protocol I, Art. 56(2).

¹⁶⁷ 1977 Additional Protocol I, Art. 85(3) and (5); 1998 Statute of the International Criminal Court, Art. 8(2).

¹⁶⁸ See resolutions of the General Conference of the IAEA, GC(XXVII)/Res. 407 (1983), GC(XXVIII)/Res. 425 (1984), GC(XXIX)/Res. 444 (1985), GC(XXXI)/Res. 475 (1987) and GC(XXXIV)/Res. 533 (1990).

¹⁶⁹ 1976 ILA Madrid Resolution on the Protection of Water Resources and Water Installations in Times of Armed Conflict, resolution of 4 September 1976, Report of the Fifty-Seventh Conference of the International Law Association (1976), 234.

the work of the International Law Commission. The draft Code of Crimes Against the Peace and Security of Mankind, adopted on second reading in 1996, defined an 'exceptionally serious war crime' as, inter alia, 'employing methods or means of warfare which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment'.¹⁷⁰ Any lingering doubts about the status of certain acts against the environment were laid to rest by the Statute of the International Criminal Court, which expressly characterises as a war crime an attack which is launched 'in the knowledge that [it] will cause . . . widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated'.¹⁷¹

International Law of War and Armed Conflict: Special Rules of Environmental Protection¹⁷²

The first treaty to establish rules specifically protecting the environment from the consequences of military activities was the 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (1977 ENMOD Convention). It prohibits parties from engaging in 'military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury' to any other party.¹⁷³ The Convention defines 'environmental modification techniques' as 'any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space'.¹⁷⁴ No definitions are provided of the terms 'widespread', 'long-lasting' and 'severe', although the Conference of the Committee on Disarmament, under whose auspices the Convention was negotiated, did attach 'Understandings' to the text of the Convention which were submitted to the General Assembly.¹⁷⁵ The terms of Article II are sufficiently opaque to leave open the question of whether the act must be deliberately intended to manipulate natural processes, or whether it is sufficient to show that natural processes have been manipulated as the result of an act which was intended to manipulate non-natural processes, as may have been the case with the destruction by Iraq of Kuwaiti oilfields. The former, and far narrower, approach would undoubtedly limit the scope of the Convention's application and its effectiveness.¹⁷⁶

¹⁷⁰ Report of the ILC on the Work of Its Forty-Eighth Session, 6 May to 26 July 1996, 51 GAOR Supp. No. 10 (A/51/10), Chapter IV.D.1, *Yearbook of the International Law Commission* (1996-II), Part 2, 17, Art. 22(2)(d). See also Art. 26 of the draft Code: an individual who 'wilfully causes or orders the causing of widespread long-term and severe damage to the natural environment' is liable to be convicted of a crime against the peace and security of humankind.

¹⁷¹ Art. 8(2)(b)(iv).

¹⁷² See International Law Commission, Second Report on the Protection of the Environment in Relation to Armed Conflicts, submitted by Marie G. Jacobsson, Special Rapporteur, 28 May 2015, A/CN.4/685.

¹⁷³ New York, 10 December 1976, in force 5 October 1978, 1108 UNTS 151. The Convention is not intended to hinder environmental modification techniques for peaceful purposes and is stated to be 'without prejudice to the generally recognised principles and applicable rules of international law concerning such use' (Art. III(1)).

¹⁷⁴ Art. II.

¹⁷⁵ The Understanding on Art. I provides that the terms should be interpreted in the following way:

1. 'widespread': encompassing an area on the scale of several hundred square kilometres;
2. 'long-lasting': lasting for a period of months, or approximately a season;
3. 'severe': involving serious or significant disruption or harm to human life, natural and economic resources or other assets.

See Understanding Relating to Article I of ENMOD, 31 GAOR Supp. No. 27 (A/31/27), Annex I.

¹⁷⁶ In the ICJ proceedings on the Advisory Opinion on nuclear weapons, some states argued that its provisions reflected customary law, whereas some nuclear weapon states argued that it would not be applicable to most cases in which

Several months after the ENMOD Convention was concluded, the 1977 Additional Protocol I to the 1949 Geneva Conventions was adopted. The 1977 Additional Protocol I contains two explicit obligations designed to protect the environment which, given the large number of parties and views expressed by states, may now reflect a rule of customary international law.¹⁷⁷ Under Article 35, it is 'prohibited to employ methods and means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment'.¹⁷⁸ Article 55, entitled 'Protection of the Natural Environment', provides that:

Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare that are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.¹⁷⁹

The Protocol also prohibits attacks against the natural environment by way of reprisals.¹⁸⁰ In its Advisory Opinion on nuclear weapons, the ICJ noted that these provisions of Additional Protocol I provide additional protection for the environment, and impose 'powerful constraints for all the States having subscribed to these provisions'.¹⁸¹ The implication that the 'powerful constraints' of the Protocol did not – at least in 1996 – reflect customary law, may no longer hold true with the adoption of the 1998 Statute of the International Criminal Court and France's accession, on 11 April 2001, to the Protocol.¹⁸²

Iraq's invasion of Kuwait in August 1990 led the Security Council to consider, for the first time, the responsibility of states for the adverse environmental consequences of unlawful military acts. Security Council Resolution 687 reaffirmed that Iraq was liable under international law for, inter alia, 'environmental damage and the depletion of natural resources' resulting from the unlawful invasion and occupation of Kuwait.¹⁸³ The Iraqi invasion of Kuwait led to further

nuclear weapons might be used because the effect on the environment would be a side effect and not a result of deliberate manipulation (6 *Yearbook of International Environmental Law* 540 (1995)).

¹⁷⁷ Although the United States is not a party to the Protocol, it has expressed support for the protection of the environment in similar terms. The International Committee for the Red Cross, in its study on customary international humanitarian law, identifies customary rules with a similar content to Arts. 35(3) and 55(1) of the Protocol. See ICRC, 'Study on Customary International Humanitarian Law', 87(857) *International Review of the Red Cross* (2005), Annex, Rules 43–45 and 76(e); J.-M. Henckaerts and L. Doswald-Beck, *Customary International Humanitarian Law* (2006) (see www.icrc.org/eng/resources/documents/publication/pcustom.htm).

¹⁷⁸ Art. 35(3). ¹⁷⁹ Art. 55(1). ¹⁸⁰ Art. 55(2).

¹⁸¹ (1996) ICJ Reports 242, para. 31. On the arguments presented by states, see 6 *Yearbook of International Environmental Law* 538–40 (1995). Only France expressed the view that these Articles of the Protocol did not reflect customary law (CR 95/24, at 23 and 25–6).

¹⁸² See also the application by the Federal Republic of Yugoslavia instituting proceedings against the United Kingdom, 28 April 1999 ('by taking part in the bombing of oil refineries and chemical plants, the United Kingdom of Great Britain and Northern Ireland has acted against the Federal Republic of Yugoslavia in breach of its obligation not to cause considerable environmental damage') and Request for Provisional Measures, 28 April 1999. Similar claims were made in the applications against nine other NATO members. Similarly, see the application of the Democratic Republic of the Congo instituting proceedings against Rwanda, available at www.icj-cij.org/docket/files/126/7070.pdf (French only), 28 May 2002, 16.

¹⁸³ Security Council Res. 687/1991, 30 ILM 847 (1991). On the Iraq Compensation Commission and the assessment of 'environmental damage', see Chapter 16, pp. 755–60. On the arguments of states as to the implications of Res. 687 for environmental protection in times of armed conflict, see 6 *Yearbook of International Environmental Law* 539–40 (1995).

consideration of the environmental effects of war and armed conflict, including an examination of the adequacy of the existing and rather limited treaty rules. Nonetheless, Agenda 21 concluded two years later reflected limited progress. It called on the international community to consider measures in accordance with international law 'to address, in times of armed conflict, large-scale destruction of the environment that cannot be justified under international law', and identified the General Assembly and its Sixth Committee as the appropriate fora to deal with the issue, taking into account the competence and role of the International Committee of the Red Cross.¹⁸⁴ In December 1992, the General Assembly adopted a resolution stressing that destruction of the environment not justified by military necessity and carried out wantonly was 'clearly contrary to international law', and noted that existing provisions of international law prohibited the destruction of oil well heads and the release and waste of crude oil into the sea.¹⁸⁵ The General Assembly urged states to 'take all measures to ensure compliance with the existing international law applicable to the protection of the environment in times of armed conflict'. Since then, however, no new treaties have been negotiated or adopted, and it has been left to the ICJ (in its Advisory Opinion on nuclear weapons and in *Armed Activities on the Territory of the Congo*)¹⁸⁶ and the Statute of the International Criminal Court (with its classification of certain attacks causing severe environmental damage as a war crime)¹⁸⁷ to mark the modest developments which have occurred.¹⁸⁸

Environmental Security and International Law

Increasingly, the relationship between environmental protection and armed conflict is seen as 'bi-directional':¹⁸⁹ in other words, the concern is not just how international law applies to military activities and their effects on the environment, but also how environmental threats can contribute to threats to peace and security. The link between natural resources and conflict has received growing attention in scholarship on environmental security: while 'non-environmental' factors remain at the heart of most conflicts, the contributing role of environmental degradation is evident in several cases, for example, the conflict in Sudan.¹⁹⁰ Nevertheless, international legal development in this area remains limited. There is some recognition of the interconnection between natural resources and conflict in instruments such as Principle 25 of the Rio Declaration, which provides '[p]eace, development and environmental protection are

¹⁸⁴ Agenda 21, para. 39.6(a). ¹⁸⁵ UNGA Res. 47/591 (1992).

¹⁸⁶ In its judgment in the case of *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, the ICJ held that Uganda had violated international law by the looting, plundering and exploitation of the natural resources of the Democratic Republic of the Congo by its armed forces and by its failure to prevent such acts (*Armed Activities on the Territory of the Congo (New Application: 2002) (Democratic Republic of the Congo v. Rwanda)*, Judgment of 3 February 2006 (2006) ICJ Reports 6, paras. 245, 250 and 345).

¹⁸⁷ See Art. 8(2)(b)(iv) of the Rome Statute of the International Criminal Court, Rome, 17 July 1998, in force 1 July 2002, 2187 UNTS 3; and n. 149.

¹⁸⁸ See also 'Adverse Effects of the Illicit Movement and Dumping of Toxic and Dangerous Products and Wastes on the Enjoyment of Human Rights: Report of the Special Rapporteur, Okechukwu Ibeanu', UN Doc. A/HRC/5/5, 5 May 2007.

¹⁸⁹ P. M. Dupuy and J. E. Viñuales, 'Environmental Dimensions of International Security', 366 *International Environmental Law* (2015).

¹⁹⁰ Four natural resources are closely linked to conflict in Sudan: oil and gas reserves, the waters of the Nile, hardwood timber and agricultural land (UNEP, *Sudan: Post-Conflict Environmental Assessment Synthesis Report* (June 2007)). See generally UNEP, *From Conflict to Peacebuilding: The Role of Natural Resources and the Environment* (2009) (citing a figure of at least 40 per cent of all intrastate conflicts in the last sixty years having a link to natural resources).

interdependent and indivisible'. There has also been a growth of interagency initiatives focused on environmental security such as the UNEP-led Environmental Security (ENVSEC) Initiative¹⁹¹ and the EU-UN Partnership on Land, Natural Resources and Conflict Prevention.¹⁹² No treaty deals directly with the interrelationship between environmental degradation and conflict, although some – such as the UN Convention on Combating Desertification and the UNFCCC – could clearly play a role in conflict prevention.¹⁹³

One environmental security issue that has received increasing attention in international policy discussions, including before the UN Security Council, is that of 'environmentally displaced persons' – persons displaced from their homelands as a result of deteriorating environmental conditions. Estimates of the number of environmentally displaced persons currently or in the future vary significantly, but such flows are expected to increase substantially under conditions of climate change.¹⁹⁴ The popular term 'environmental refugee' sometimes used to describe such people is considered problematic as no such category exists under the 1951 Refugee Convention, which instead seeks to protect those with a 'well-founded fear of being persecuted' in their country for reasons of race, religion, nationality or membership of a particular social group or political opinion.¹⁹⁵ The potential for environmentally displaced persons to fall between the gaps in international humanitarian and refugee law, and international environmental law has led to calls for a new treaty or amendment of existing treaties to address the issue specifically.¹⁹⁶ At present though there seems little appetite for international legislation on this question. The 2015 Paris Agreement is silent on the matter of climate change displaced persons;¹⁹⁷ the only reference is in the COP decision adopting the Agreement which requests the Executive Committee of the Warsaw International Mechanism on Loss and Damage to establish a task force 'to develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change'.¹⁹⁸

CONCLUSIONS

Over the past decades, environmental considerations have been integrated into human rights discourse and, to a lesser extent, into the definition and application of international humanitarian rules governing methods and means of armed conflict.

In relation to human rights, notwithstanding the fact that most human rights treaties do not expressly refer to environmental considerations, practice under those conventions recognises that a failure to protect the environment adequately may give rise to individual human rights violations, particularly in relation to rights associated with the enjoyment of a person's home

¹⁹¹ See www.envsec.org/index.php?lang=en ¹⁹² See www.un.org/en/land-natural-resources-conflict

¹⁹³ See further, Chapter 8, pp. 300–7; Chapter 10, pp. 433–4. See also O. Das, *Environmental Protection, Security and Armed Conflict: A Sustainable Development Perspective* (Cheltenham, UK: Edward Elgar, 2013), 112.

¹⁹⁴ V. Mence et al., 'Environmentally-related International Migration, Irregular Migration Research Programme', Occasional Paper Series 6/2013 (Australian Government, 2013); IMDC, *2016 Global Report on Internal Displacement*, May 2016, at www.internal-displacement.org/publications/2016/2016-global-report-on-internal-displacement-grid-2016

¹⁹⁵ 1951 Refugee Convention, Art. I.

¹⁹⁶ See e.g. B. Docherty and T. Giannini, 'Confronting a Rising Tide: A Proposal for a Convention on Climate Change Refugees', 33 *Harvard Environmental Law Review* 349 (2009); cf. J. McAdam, 'Swimming Against the Tide: Why a Climate Change Displacement Treaty Is Not the Answer', 23 *International Journal of Refugee Law* 2 (2011).

¹⁹⁷ There is, however, a reference to 'migrants' in the preambular clause dealing with human rights obligations of states.

¹⁹⁸ Para. 50.

and property. Equally, practice recognises that the collective interest of a community in taking steps to protect the environment may justify reasonable interference with property or other rights. In both aspects, the principal need is to ensure that a balance is found between individual and collective rights. Human rights procedures have also begun to define the content of participatory rights in the environmental domain: the non-compliance mechanism established under the 1998 Aarhus Convention represents an innovative step,¹⁹⁹ as does case law in the European and Inter-American jurisdictions regarding rights of access to information and the need for environmental impact assessment.

In relation to armed conflict, it is ironic that proceedings before the ICJ concerning the legality of the use of nuclear weapons catalysed an important debate on the relationship between methods and means of warfare and the protection of the environment. The Court's advisory opinion recognised, for the first time, the existence of norms of international environmental law as custom, and that they are applicable equally in times of armed conflict. It is to be hoped that, with the recognition by the Statute of the International Criminal Court of certain forms of environmental damage as constituting evidence of a war crime, issues regarding the protections afforded the environment during armed conflict will receive greater attention in coming years.

Another question looming on the horizon that highlights the growing intersection between environmental law, human rights and the laws of armed conflict is what protection human rights and humanitarian law offers to people displaced by the adverse effects of climate change or others forms of environmental degradation. This is a topic that is only just beginning to engage policymakers and scholars. Perhaps more than any other issue, however, the problem of climate-change-displaced people challenges international environmental law, human rights and humanitarian law to find ways to integrate environmental concerns into human rights frameworks, and human rights concerns into the laws regarding climate change.

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18

International Economic Law: Trade, Investment and Intellectual Property

CHAPTER OUTLINE

This chapter considers the multifaceted relationship between international environmental law and international law concerning economic development. Three key aspects of this interlinkage are discussed:

1. the relationship between environment and international trade law under the global WTO trade regime and regional free trade agreements, including
 - (a) trade measures in environmental treaties;
 - (b) unilateral trade measures for environmental purposes;
 - (c) requirements under trade law for national measures adopted for the protection of human, animal or plant life and health; and
 - (d) the intersection of environmental protection and competition law requirements concerning subsidies, anti-competitive agreements and dumping;
2. the treatment of environmental issues in international investment law concerned with facilitating flows of foreign direct investment to stimulate economic development, focusing particularly on case law interpreting the application of expropriation and fair treatment requirements to domestic environmental measures; and
3. the relationship between environment and intellectual property rights as they apply to the development of technology and products, especially those that may be harmful to the environment, as well as the interaction between intellectual property rights and indigenous traditional knowledge.

INTRODUCTION

The integration of economic and environmental aspects of international law has been an important aspect of international environmental law particularly since UNCED.¹ Such integration was prompted in part by considerations of the relationship between differing environmental

¹ See generally D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (New York: Foundation Press, 2011, 4th edn), ch. 17; L. Krämer, 'Regional Economic Integration Organizations', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), ch. 37; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: Oxford University Press, 2009, 3rd edn), ch. 14.

standards and economic competitiveness.² Principle 4 of the Rio Declaration reflects this interdependence, providing that ‘in order to achieve sustainable development environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it’. The theme of integration was central to the preparations for UNCED. Agenda 21 recognised that the international economy should provide a ‘supportive international climate for achieving environment and development goals’,³ and identified the following as objectives for the international community:

- making trade and the environment mutually supportive;⁴
- encouraging macroeconomic policies conducive to environment and development; and
- providing adequate financial resources to developing countries and dealing with international debt.⁵

This chapter considers the international legal aspects of these issues. It is divided into three sections. The first discusses the relationship between international trade and environmental protection, and the application of international rules of competition law to environmental issues. The second examines the relationship between protection of the environment and rules of international law for the promotion of foreign investments found in investment treaties – bilateral and multilateral – which seek to protect foreign investments against certain governmental acts, in particular, expropriation and unfair treatment. The final section concerns intellectual property rights and the extent to which they govern the development of technologies which may be considered harmful to the environment. It also canvasses the intersection between intellectual property rights and indigenous traditional knowledge in the context of biodiversity conservation.

One of the consequences of an emphasis on greater integration of economics and the environment has been to bring together two very different groups of international legal practitioners who have traditionally had very little to do with one another. International economic law in the past had been seen as a separate, self-contained field, dominated by the principles and ideology of free trade and economic development. Over time, environmentalists and others have challenged the dominance of such ideals and particularly their utility to achieve other international goals such as environmental protection.⁶

² R. Stewart, ‘Environmental Regulation and International Competitiveness’, 102 *Yale Law Journal* 2039 (1993); R. Hudec, ‘Differences in International Environmental Standards: The Level Playing-Field Dimension’, 5 *Minnesota Journal of Global Trade* 1 (1995); R. Hudec and J. Bhagwati (eds.), *Fair Trade and Harmonization* (Cambridge, MA/London: Harvard University Press, 1996); D. Esty and D. Garadin, ‘Environmental Competitiveness and International Trade: A Conceptual Framework’, 32 *Journal of World Trade* 5 (1998); O. Fauchald, *Environmental Taxes and Trade Discrimination* (1998); R. B. Stewart, ‘Environmental Regulation and International Competitiveness’, in R. R. W. Brooks, N. O. Keohane and D. A. Kysar (eds.), *Economics of Environmental Law, vol. 2, Issues and Applications* (Cheltenham, UK: Edward Elgar, 2009); F. Iraldo, F. Testa, M. Melis and M. Frey, ‘A Literature Review on the Links Between Environmental Regulation and Competitiveness’, 21(3) *Environmental Policy and Governance* 210 (2011).

³ Agenda 21, para. 2.3.

⁴ This language of ‘mutual supportiveness’ remains at the heart of trade and environment policy: see Hong Kong Ministerial Declaration of the Sixth Ministerial Conference, Hong Kong, 18 December 2005, WT/MIN(05)/DEC, available at www.wto.org/english/thewto_e/minist_e/min05_e/final_text_e.htm, para. 30; Doha Ministerial Declaration of the Fourth Ministerial Conference, Doha, Qatar, 14 November 2001, WT/MIN(01)/DEC/1, paras. 6 and 31. See also R. Pavoni, ‘Mutual Supportiveness as a Principle of Interpretation and Law-Making: A Watershed for the “WTO-and-Competing-Regimes” Debate?’, 21(3) *European Journal of International Law* 649 (2010).

⁵ *Ibid.* ⁶ See generally D. Esty, *Greening the GATT* (London: Longman, 1994).

Greater integration between economics and the environment has manifested itself in many other ways than simply as a clash of intellectual cultures. A number of international legal issues relating to trade, investment, intellectual property and the environment have been controversial in the last few decades, which are elaborated in the following sections of the chapter.

In relation to trade, the principal issues concern the use in environmental treaties of international trade measures; the circumstances in which one or more states may lawfully adopt 'unilateral' environmental protection measures (measures taken outside the context of an international agreement) which limit international trade and may conflict with obligations under global and regional free trade agreements; the requirements for states to adopt trade measures in furtherance of national goals of human, animal or plant health and safety protection; and the emerging relationship between competition law (especially subsidies and anti-dumping rules) and environmental protection.

In the area of international investment law, a growing number of disputes address the manner in which the protections that bilateral and multilateral investment treaties are intended to afford against expropriation and other prohibited acts are applied to environmental regulatory measures, including those that are taken in accordance with international environmental obligations.⁷ Other arrangements – domestic and international – which seek to provide guarantees (insurance and other) against the acts prohibited by investment treaties – are also becoming increasingly connected to international environmental rules.

Finally, the interaction of environmental considerations with intellectual property rights – often seen as drivers of technological development and economic growth – may raise questions of the extent to which environmental concerns may limit or prevent the grant of patent (or other intellectual property rights) to products which may have adverse consequences for the environment, or those which harness traditional indigenous knowledge regarding biodiversity.

TRADE AND ENVIRONMENT

Trade Measures in International Environmental Agreements

Where trade measures are adopted in international environmental agreements – usually for the purposes of enforcement – this can potentially bring such agreements into conflict with rules under free trade agreements, such as those of the WTO/GATT regime. In such instances, should trade rules trump environmental rules or vice versa? International law does not provide a clear answer to this question, which has led to efforts to negotiate (so far unsuccessfully) a carve-out from WTO requirements for trade measures adopted under multilateral environmental treaties.

The use of trade measures in international environmental agreements has a long history. The 1933 London Convention controlled and regulated the import, export and traffic in certain trophies.⁸ Other agreements establish quantitative restrictions on international trade to achieve

⁷ For a review of literature on the environmental effects of foreign investment, see Note by the OECD Secretariat, DAF/MAI/RD(97)33/Rev1 (www1.oecd.org/daf/mai/pdf/ng/ng9733r1e.pdf); M. Rauscher, 'International Trade, Foreign Investment, and the Environment', in K.-G. Mäler and J. R. Vincent (eds.), *Handbook of Environmental Economics* (New York: Elsevier, 2005), vol. 3, 1403.

⁸ Art. 9; Chapter 10, p. 437.

environmental protection objectives.⁹ Three types of environmental objectives have been addressed by trade regulations: agreements to protect wildlife, agreements to protect the environment of the importing state from harmful organisms and products, and agreements to protect the global commons.

Agreements for the protection of wildlife usually make use of restrictions on export or import between parties,¹⁰ often based on a permit system, as well as on transit through the territory of parties,¹¹ and restrictions on trade with non-parties.¹² Agreements to protect the environment of the importing state from harmful organisms or products, which have generally been concerned with plant pests, hazardous wastes, toxic chemicals and pesticides, but which have more recently been extended to include genetically modified organisms, rely primarily on import restrictions,¹³ although restrictions on transit through the territory of parties and on trade with non-parties are also used. Agreements to restrict exports and imports either establish a complete ban,¹⁴ or make imports conditional upon the grant of a permit,¹⁵ or the prior informed consent of the relevant authorities of the importing state,¹⁶ or a combination of techniques. The 2000 Biosafety Protocol combines a prior informed consent procedure and risk assessment, while also allowing importing parties to restrict imports where there is a '[l]ack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health'.¹⁷ For hazardous waste, export restrictions supplement the import restrictions.¹⁸

To date, the only international agreement that has used trade measures to protect the global commons is the 1987 Montreal Protocol. Article 4 controls the import and export of certain ozone-depleting substances from and to non-parties, whereas Article 4B requires parties which are unable to phase out production of controlled substances by the required phase-out dates to ban the export of used, recycled and reclaimed quantities of the substances, other than for the purpose of destruction. The 1992 Climate Change Convention/2015 Paris Agreement and the 1992 Biodiversity Convention do not use trade provisions as an international enforcement measure, although the 1997 Kyoto Protocol makes use of such measures under its compliance mechanism.¹⁹ As discussed below, both the climate change and biodiversity regimes address the permissibility of unilateral measures adopted by parties.

⁹ 1940 Western Hemisphere Convention, Art. IX; 1950 Birds Convention, Arts. 3, 4 and 9; 2003 Revised African Nature Convention, Art. IX(2)(h); 1973 CITES, Arts. III-V and VII; 1987 Montreal Protocol, Art. 4 (as amended); 1998 Chemicals Convention, Arts. 10 and 11 and Annex II, para. (c)(i); 2000 Biosafety Protocol, Arts. 10 and 11; 2001 POPs Convention, Art. 3.

¹⁰ 1973 CITES, Arts. III, IV and V. ¹¹ 1940 Western Hemisphere Convention, Art. IX. ¹² 1973 CITES, Art. X.

¹³ 1951 International Plant Protection Convention, Art. 1; 1954 African Phyto-Sanitary Convention, Preamble; 1956 Plant Protection Agreement for the South East Asia and Pacific Region, Preamble; 1976 North American Plant Protection Agreement; 2000 Biosafety Protocol, Arts. 10 and 11; 2001 POPs Convention, Art. 3.

¹⁴ 1991 Bamako Convention, Art. 4; 1956 Plant Protection Agreement for the South East Asia and Pacific Region, Art. IV and Appendix B; 2001 POPs Convention, Art. 3.

¹⁵ 1989 Basel Convention, Art. 4(1); 1951 International Plant Protection Convention, Art. VI(l).

¹⁶ 1998 Chemicals Convention, Arts. 10 and 11 and Annex II, para. (c)(i); 2000 Biosafety Protocol, Arts. 8-12 ('Advance Informed Agreement Procedure').

¹⁷ 2000 Biosafety Protocol, Arts. 10(6) and 11(8).

¹⁸ 1989 Basel Convention, Art. 4; 1991 Bamako Convention, Art. 4; 2001 POPs Convention, Art. 3.

¹⁹ Under the compliance regime for the Kyoto Protocol, the Enforcement Branch of the Compliance Committee has the authority to impose trade restrictions on parties as a sanction for non-compliance. In the case of non-compliance with emissions targets, Annex I parties may be subject to a penalty of 30 per cent in the second commitment period and a

The use of trade sanctions to implement international environmental obligations raises possible conflicts between obligations under environmental agreements and those under free trade agreements. Such conflicts would be subject to the general rules of international law, as reflected in the 1969 Vienna Convention on the Law of Treaties.²⁰ Applying these rules would suggest that the trade restrictions established under post-1994 agreements, such as the 2000 Biosafety Protocol and the 2001 POPs Convention, prevail over inconsistent obligations established under the 1994 GATT (to the extent that they are inconsistent) as between parties to both, but that the free trade obligations of the GATT might prevail where a state was not a party to the relevant multilateral agreement (to the extent that GATT obligations were inconsistent). The situation is slightly more complex in the case of pre-1994 multilateral environmental agreements, such as the 1987 Montreal Protocol and the 1989 Basel Convention. With GATT 1947 being readopted as GATT 1994 at the Uruguay Round of trade negotiations, the trade agreement is (at least technically) the *lex posterior*.²¹ However, the ruling of the WTO Appellate Body in the *Shrimp/Turtle* dispute (discussed below) suggests that trade restrictions in multilateral environmental agreements like the 1987 Montreal Protocol and the 1989 Basel Convention are unlikely to fall foul of GATT 1994 requirements.

Even for international environmental agreements concluded after 1994, the relationship between the trade measures used in environmental agreements and the requirements of trade treaties is sometimes unclear.²² Despite the prominence of the issue of the relationship between trade and environmental commitments during the negotiations for the 2000 Biosafety Protocol, the only clue as to the appropriate relationship is given by opaque language in the Protocol's Preamble.²³ Ten years on, the Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing, which raises issues of potential conflict with requirements under the WTO Trade-Related Aspects of Intellectual Property (TRIPs) Agreement, also did not manage to avoid ambiguity on this question. Article 4 of the Protocol provides:

1. The provisions of this Protocol shall not affect the rights and obligations of any Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity. This paragraph is not intended to create a hierarchy between this Protocol and other international instruments.

[. . .]

3. This Protocol shall be implemented in a mutually supportive manner with other international instruments relevant to this Protocol. Due regard should be paid to useful and relevant ongoing work or practices under such international instruments and relevant international organizations, provided that they are supportive of and do not run counter to the objectives of the Convention and this Protocol.

bar on selling emission reductions: Decision 27/CMP.1, 'Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol', Report of the Conference of the Parties serving as the Meeting of the Parties on its first session, Montreal, 28 November–10 December 2005, FCCC/KP/CMP/2005/8/Add.3, Art. XV(5)(a) and (b) and (8).

²⁰ Chapter 4, p. 398.

²¹ See C. Wold, 'Multilateral Environmental Agreements and the GATT: Conflict and Resolution?', 26 *Environmental Law* 841 (1996).

²² See A. H. Qureshi, 'The Cartagena Protocol on Biosafety and the WTO: Coexistence or Incoherence?', 49 *International and Comparative Law Quarterly* 835 (2000).

²³ Chapter 10, pp. 107ff.

Further clarification may be forthcoming if current negotiations on the relationship between trade rules and environmental agreements, being conducted as part of the Doha Round, are successful (see below), although after more than a decade of negotiations, a final resolution of this question does not appear likely.²⁴

The GATT envisages certain exceptions to the prohibition on import restrictions, and support has been expressed for the view that import restrictions could be justified under the Article XX exceptions when they are based on measures adopted pursuant to a multilateral environmental agreement, such as the 1987 Montreal Protocol. In 1992, the EU suggested that, for an exception to be so justified, the multilateral environmental agreement should fulfil certain conditions, including:

1. the agreement should have been negotiated under the aegis of the UN and the procedures for negotiation should have been open to the participation of all GATT members; and
2. the agreement should be open for accession by any GATT members on terms which are equitable in relation to those which apply to original members.²⁵

The EU also recognised that the same criteria should apply to regional agreements, but that in no circumstances could such agreements provide justification for applying extrajurisdictional trade measures vis-à-vis countries outside the region.²⁶ The requirement for multilaterality in order to justify trade action for environmental purposes was stressed by the WTO Appellate Body in the *Shrimp/Turtle* dispute.²⁷

The 1987 Montreal Protocol raised further legal issues by requiring parties to ban the import and export of controlled substances from non-parties and, following amendments, to ban the import from non-parties of certain products that contain controlled substances.²⁸ Here, the question that arose concerned whether these bans could be enforced, under international law, against states which were not parties to the Protocol or relevant amendments but which are parties to the GATT. The dispute settlement bodies of the WTO have not yet been called upon to consider the question;²⁹ at first sight, such restrictions might appear to be incompatible with

²⁴ See K. C. Kennedy, 'Status of the Trade-Environment-Sustainability Triad in the Doha Round Negotiations and Recent US Trade Policy', 19 *Indiana International and Comparative Law Review* 529 at 530-9 (2009). For a summary of what progress has been made, see WTO Committee on Trade and Environment, Report by the Chairman to the Trade Negotiations Committee, 21 April 2011, TN/TE/20. See also WTO Trade Negotiations Committee, Cover Note by the Chair, 21 April 2011, TN/C/13, which noted that the collection of reports, including the foregoing, is 'realistic in what it reveals about the issues that still divide negotiators and put the successful conclusion of the Round at serious risk' (*ibid.*, 1).

²⁵ GATT Doc. TRE/W/5, 17 November 1992, 9.

²⁶ *Ibid.* The 1991 Bamako Convention, negotiated under the auspices of the OAU, might have difficulty in meeting this test.

²⁷ *United States - Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Appellate Body, WT/DS58/AB/R, 38 ILM 118 (1999), para. 168.

²⁸ 1987 Montreal Protocol, Art. 4(1)-(4); see further Chapter 7, pp. 286-7.

²⁹ There was potential for this issue to be considered in the *EC - Biotech* dispute concerning the EU's measures regulating genetically modified organisms and foods. However, the dispute was decided by a WTO Panel on the basis of the SPS Agreement alone and the Panel's decision was not appealed to the Appellate Body (see pp. 879-82). The complexity of the relationship between MEAs and trade obligations was also an issue considered in the *Chile - Swordfish* dispute, which involved a challenge by the EU to the conservation measures taken by Chile in respect of swordfish fishing in the South Pacific. The EU argued that the measures violated Arts. V and XI of the GATT. Chile also brought a challenge before ITLOS, arguing that the EU had violated Arts. 64 and 116-119 of UNCLOS. The dispute was ultimately settled by mutual agreement between the parties; however, in both the WTO and the ITLOS proceedings, both parties have reserved the right to revive the proceedings at any time: *Chile - Measures Affecting the Transit and Importing of*

Article XI of the GATT (elimination of quantitative restrictions) but might be brought within the exceptions established under Article XX. A WTO Panel or the Appellate Body would undoubtedly find it difficult to hold that an import ban imposed pursuant to an international treaty that now enjoys universal participation was not 'necessary to protect human, animal or plant life or health', although the result would not be certain. Under the NAFTA, Mexico, Canada and the United States have adopted a different approach, expressly providing that trade sanctions in the 1973 CITES, the 1987 Montreal Protocol (and the 1990 amendments thereto) and the 1989 Basel Convention will prevail over the NAFTA.³⁰

Similar proposals have been put forward in the context of the Doha Round negotiations on trade and environment.³¹ The 2001 Doha Declaration that authorised a new round of trade negotiations in paragraph 31 records the agreement, '[w]ith a view to enhancing the mutual supportiveness of trade and environment' and 'without prejudging their outcome', to conduct negotiations on 'the relationship between existing WTO rules and specific trade obligations set out in multilateral environmental agreements (MEAs)'.³² The negotiations are limited in scope 'to the applicability of such existing WTO rules as among parties to the MEA in question' and 'shall not prejudice the WTO rights of any Member that is not a party to the MEA in question'. This negotiating agenda excludes the important question of the WTO compatibility of trade measures applied under an MEA in respect of non-parties and also raises questions as to the meaning of the phrase 'specific trade obligations'.³³ Other areas for negotiation identified by the Doha Declaration include information exchange between MEA secretariats and relevant WTO committees and the granting of observer status at their respective meetings,³⁴ and the reduction or elimination of tariffs on environmental goods and services.³⁵ In addition, there is a separate authorisation given in the Doha Declaration relating to negotiations on fisheries subsidies.³⁶ To date, despite more than a decade of negotiations, little progress has been made in the Doha Round trade and environment negotiations,³⁷ with the possible exception of negotiations on fisheries subsidies.³⁸

Swordfish, Request for Consultations by the EC, 26 April 2000, WT/DS193/1, G/L/367; *Chile – Measures Affecting the Transit and Importing of Swordfish*, Arrangement between the EC and Chile – Communication from the EC, 6 April 2001, WT/DS193/3; *Case Concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean (Chile/European Community)*, ITLOS Case No. 7, Order 2007/3, 30 November 2007.

³⁰ See pp. 897–8.

³¹ These negotiations are taking place in special sessions of the WTO's Committee on Trade and Environment. For details of this Committee's establishment and work, see pp. 853–4.

³² Doha Ministerial Declaration of the Fourth Ministerial Conference, Doha, Qatar, 14 November 2001, WT/MIN(01)/DEC/1, para. 31.

³³ Some WTO members advocate identifying individual 'specific trade obligations' for examination by the WTO, whereas others prefer a more general approach looking at the principles governing the relationship between the WTO and MEAs, and how MEA trade measures might be accommodated under WTO rules.

³⁴ Para. 31(iii).

³⁵ Para. 31(iii). This head of negotiation has generated debates over what constitutes an environmental good or service: A. Vikhlyayev, 'Environmental Goods and Services: Defining Negotiations or Negotiating Definitions?', 38(1) *Journal of World Trade* 93 (2004).

³⁶ Doha Declaration, para. 28. On the progress achieved with respect to the application of WTO rules to fisheries subsidies, see pp. 887ff.

³⁷ See n. 24.

³⁸ Negotiations in this area are currently seeking to align with the UN sustainable development goals: see WTO, Negotiations on Fisheries Subsidies, www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_e.htm. For an overview of the progress and challenges of the Doha negotiations in relation to fisheries, see U. R. Sumaila, A. Khana, R. Watson et al., 'The World Trade Organization and Global Fisheries Sustainability', 88 *Fisheries Research* 1 (2007); UNEP and WWF, *The WTO Fisheries Subsidies Negotiations: Update and Introductory Briefing for New Delegates: Summary*

Unilateral Environmental Measures and International Trade

Unilateral environmental measures are national environmental protection measures adopted by states which include an international trade limitation or prohibition and which are adopted in the absence of agreed international standards or rules, or go beyond agreed international standards. Examples of such measures include national laws establishing product-labelling requirements, import bans or quotas, and other environmentally related measures which can have the effect, directly or indirectly, of limiting international trade. The issue raised by these measures is whether they contravene trade rules or whether they fall within relevant exceptions given their environmental purpose. The main international trade agreements of relevance to the adoption of environmental measures of this type are the 1994 GATT and TBT Agreement under the WTO, the EU Treaty, and the 1992 NAFTA between Mexico, Canada and the United States. The 1991 Treaty establishing the African Economic Community is also likely to be important.

Trade and the environment was one of the most controversial legal issues at UNCED. Four of the five instruments there adopted contain provisions on the permissibility of unilateral environmental measures. The most detailed is the consensus language adopted by 176 states in Agenda 21, which has served as an important point of reference in 'trade and environment' disputes. It committed states:

To promote, through the gradual development of universally and multilaterally negotiated agreements or instruments, international standards for the protection of the environment that take into account the different situations and capabilities of countries. States recognise that environmental policies should deal with the root causes of environmental degradation, thus preventing environmental measures from resulting in unnecessary restrictions to trade. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing international environment problems should, as far as possible, be based on an international consensus. Domestic measures targeted to achieve certain environmental objectives may need trade measures to render them effective. Should trade policy measures be found necessary for the enforcement of environmental policies, certain principles and rules should apply. These could include, *inter alia*, the principle of non-discrimination; the principle that the trade measure chosen should be the least trade-restrictive necessary to achieve the objectives; an obligation to ensure transparency in the use of trade measures related to the environment and to provide adequate notification of national regulations, and the need to give consideration to the special conditions and development requirements of developing countries as they move towards internationally agreed environmental objectives.³⁹

Report (2009); Anja von Moltke (ed.), *Fisheries Subsidies, Sustainable Development and the WTO* (London: Earthscan, 2011).

³⁹ Agenda 21, para. 39.3(d). The WSSD Plan of Implementation called for continued efforts to 'enhance the mutual supportiveness of trade, environment and development with a view to achieving sustainable development' (para. 91), and to promote 'mutual supportiveness between the multilateral trading system and the multilateral environmental agreements, consistent with sustainable development goals . . . while recognizing the importance of maintaining the integrity of both sets of systems' (para. 92).

Principle 12 of the Rio Declaration is compatible with the text of Agenda 21, but shorter, incorporating the central elements, but excluding reference to the principles. The text was drawn from Agenda 21, with one exception: 'international environmental problems' in the Agenda 21 text was replaced by 'transboundary or global environmental problems' in the Rio Declaration. Principle 12 and the Agenda 21 language were adopted by consensus, subject to the written statement of the United States that trade measures may provide an effective and appropriate means of addressing environmental concerns, including those 'outside national jurisdiction, subject to certain disciplines'.⁴⁰ While establishing a presumption in favour of free trade obligations and against national environmental measures, these formulations nevertheless leave open the possibility that unilateral measures may be adopted, even where they may have 'extra-jurisdictional effect'.

The other instruments adopted at UNCED were less specific. The 1992 Climate Change Convention provided that measures to combat climate change 'should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade', which also suggests that trade measures are permissible in certain circumstances.⁴¹ The Forest Principles also addressed trade issues, calling for international trade in forest products to be facilitated on the basis of non-discriminatory and multilaterally agreed rules and procedures consistent with international trade law and practices,⁴² and providing that '[u]nilateral measures, incompatible with international obligations or agreements, to restrict and/or ban the international trade in timber or other forest products, should be removed or avoided'.⁴³ Taken together, the UNCED instruments suggest a consensus, reinforced in the subsequent WTO/GATT jurisprudence, that unilateral measures should be avoided but that they are not, per se, prohibited. The 2002 WSSD Plan of Implementation and 2012 *Future We Want* documents largely restated the language of Agenda 21 and the Rio Declaration,⁴⁴ suggesting that states did not feel the need to revisit their approach in the light of WTO case law since 1992.

Over the course of the 1990s, the rapid development of national environmental legislation limiting imports and trade, usually adopted outside the context of agreed international standards, led to more trade-related disputes between states. This trend has continued given disparities between countries' environmental protection standards and the failure to adopt binding international standards on some issues such as forest protection and renewable energy. As a result, international courts, tribunals and other bodies have found themselves increasingly called upon to determine the compatibility of national environmental protection measures with international legal obligations, which prohibit restrictions or barriers to international trade.⁴⁵

⁴⁰ UNCED Report, A/CONF.151/26/Rev.1/Vol. II (June 1993), 18.

⁴¹ Art. 3(5). In the 2015 Paris Agreement the language is more circumspect. Art. 4(15) calls on parties to 'take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties'. 'Response measures' in this instance could include unilateral trade measures taken to support domestic climate change policies.

⁴² Principle 13(a) and (d); see also Principle 13(b). ⁴³ Principle 14.

⁴⁴ WSSD Plan of Implementation, para. 95; *Future We Want*, para. 58(h).

⁴⁵ Mark Wu and James Salzman distinguish between two categories in the jurisprudence: 'classic' trade and environment disputes such as *Tuna/Dolphin* and *Shrimp/Turtle* where developed countries use unilateral trade measures in an attempt to improve the environmental behaviour of developing countries, and 'next generation' disputes which concern issues of 'green industrial policy' such as renewable energy subsidies and are brought both by developed and developing countries. See Mark Wu and James Salzman, 'The Next Generation of Trade and Environmental Conflicts: The Rise of Green Industrial Policy', 108 *Northwestern University Law Review* 401 (2014).

The following sections consider the requirements of free trade agreements regarding unilateral trade measures, as well as case law under the WTO dispute settlement system concerning such measures.

WTO/GATT

The GATT was originally adopted in 1947 as the main international arrangement to encourage trade between states.⁴⁶ In December 1993, after seven years of negotiation, the Trade Negotiations Committee of the Uruguay Round adopted by consensus the Final Act. The Final Act included the Agreement Establishing the World Trade Organization (WTO)⁴⁷ and annexed agreements on, inter alia: the General Agreement on Tariffs and Trade 1994 (GATT 1994),⁴⁸ the General Agreement on Trade in Services (GATS),⁴⁹ the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS),⁵⁰ the Agreement on Technical Barriers to Trade (TBT Agreement),⁵¹ the Agreement on Sanitary and Phytosanitary Measures (SPS Agreement),⁵² and the Understanding on Rules and Procedures Governing the Settlement of Disputes (Dispute Settlement Understanding, or DSU).⁵³ These and related agreements were opened for signature at Marrakesh, Morocco, on 15 April 1994 and entered into force on 1 January 1995.

The entire package established a permanent organisation, the WTO, which, with a current membership of 164 states and the EU, has become an important forum for the development of international law on matters relating to trade and the environment. The WTO replaced the former GATT Council as 'the common institutional framework for the conduct of trade relations among its Members in matters related to the agreements and associated legal instruments included in the Annexes [to the WTO Agreement]'.⁵⁴ As a permanent multilateral institution, the WTO took its place alongside the World Bank and the IMF. Although it does not have express environmental objectives, the Preamble to the WTO Agreement recognises that the WTO must allow 'the optimal use of the world's resources in accordance with the objective of sustainable development' and seek 'both to protect and preserve the environment and enhance the means for doing so in a manner consistent with' the respective needs and concerns of the parties at different levels of economic development. The WTO's tasks are: to implement the WTO Agreement and the multilateral trade agreements; to provide the framework for the implementation of the plurilateral trade agreements; to administer the DSU and the Trade Policy Review Mechanism; to provide a forum for the negotiations among members; and to cooperate with the World Bank and the IMF.⁵⁵ Despite the institutional overlay introduced by the WTO Agreement, the GATT

⁴⁶ 30 October 1947, 55 UNTS 194; the GATT 1947 was brought into force on a provisional basis by the Protocol of Provisional Application, 30 October 1947, in force 1 January 1948, 55 UNTS 308. Eight multilateral trading rounds took place under the auspices of the GATT: 1947 (Geneva); 1949 (Annecy); 1951 (Torquay); 1956 (Geneva); 1960-1 (Geneva); 1964-7 ('Kennedy'); 1973-7 (Tokyo); and 1986-93 (Uruguay).

⁴⁷ 33 ILM 13 (1994).

⁴⁸ Annex 1A, 33 ILM 28 (1994). This Annex also includes Agreements on, inter alia, Agriculture, Trade-Related Investment Measures, and Subsidies and Countervailing Measures.

⁴⁹ Annex 1B, 33 ILM 44 (1994). The text makes no reference to sustainable development or environmental protection requirements, although a Decision on Trade in Services and the Environment was adopted.

⁵⁰ Annex 1C, 33 ILM 81 (1994). The text makes no reference to sustainable development or environmental protection requirements.

⁵¹ Annex 1A, 33 ILM 28 (1994). ⁵² Annex 1A, 33 ILM 28 (1994). ⁵³ Annex 2, 33 ILM 136 (1994).

⁵⁴ See n. 47, Art. II(1).

⁵⁵ *Ibid.*, Art. III. The institutional arrangements comprise a ministerial conference, a general council (with authority to establish a dispute settlement body), a secretariat and a number of specialist subsidiary councils and committees.

1994 remains the central substantive agreement under the WTO umbrella, which is designed to encourage trade between WTO members by reducing tariffs and preventing trade barriers.

Article III(1) of the GATT 1994 prohibits the application to imported or domestic products of internal taxes and other internal charges, laws, regulations and requirements so as to afford protection to domestic products. Article III(2) prohibits the application, directly or indirectly, of internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products or in a manner contrary to Article III(1). Under Article XI, prohibitions or restrictions, including quotas, import or export licences or other measures, on the import or export of any product from or to another contracting party are prohibited. Article XX permits exceptions to these limitations. It provides, *inter alia*:

Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:⁵⁶

[...]

(b) necessary to protect human, animal or plant life or health;

[...]

(g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.

The GATT 1994 does not include a reference to environmental protection.⁵⁷ Efforts during the Uruguay Round to strengthen provisions on environmental protection, in particular by amending Article XX(b) and (g), failed, although pursuant to Article 2.2 of the Agreement on Technical Barriers to Trade (discussed below) the contracting parties did identify 'environmental protection' as a 'legitimate objective' to be considered in evaluating the GATT-compatibility of environmental regulations.

Technical Barriers to Trade

During the 1973–9 Tokyo Round, an Agreement on Technical Barriers to Trade (1979 TBT Agreement) was negotiated and adopted to deal with the growing problem of trade barriers resulting from disparate national regulations.⁵⁸ It established basic guidelines which governed, among other matters, the acceptability of national environmental regulations. The 1979 TBT Agreement did not attract widespread ratification by GATT contracting parties, and during the Uruguay Round it was renegotiated. The result of the Uruguay Round negotiations was two new agreements dealing with national regulatory standards: the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement),⁵⁹ which deals with measures designed to protect human, animal and plant life or health (discussed below), and the Agreement on

⁵⁶ This introductory paragraph is generally referred to as the Art. XX *chapeau*.

⁵⁷ But see the understanding of an 'environmental' interpretation of GATT Art. XX(b) and (g) of Canada, Mexico and the United States in the context of the NAFTA, pp. 890–1.

⁵⁸ In force 1 January 1980, Misc. 20 (1979), Cmnd 7657, 31 UST 405, TIAS 9616.

⁵⁹ 1867 UNTS 493, 15 April 1994, in force 1 January 1995.

Technical Barriers to Trade (TBT Agreement),⁶⁰ which covers other technical standards not regulated by the SPS Agreement.⁶¹ The main objective of the TBT Agreement is to ensure that technical regulations and standards, including packaging, labelling and marking requirements and methods of certifying conformity with technical regulations and standards, are not adopted or applied so as to create unnecessary obstacles to trade. Environmental regulations may be technical barriers to trade. The TBT Agreement adopts the principles of national treatment and non-discrimination by stating that, in relation to such technical regulations or standards, imported products are not to receive less favourable treatment 'than that accorded to like products of national origin and to like products originating in any other country'.⁶² WTO members must also ensure that technical regulations 'are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade'. Accordingly, technical regulations must not be 'more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create'.⁶³ The list of 'legitimate objectives' in Article 2.2 includes 'the protection of human health or safety, animal or plant life or health, or the environment'. In assessing the risks to health or the environment, the relevant factors for consideration include 'available scientific and technical information, related processing technology or intended end-uses of products'.⁶⁴ This formulation suggests that both characteristics of the product itself, and the process by which it is produced, are relevant in assessing the health or environmental risks posed by a product.

The main distinction between technical regulations and standards, which lay down technical specifications relating to the characteristics of a product, is that in the case of the former compliance is mandatory while in the case of the latter it is not. All products are subject to the provisions of the TBT Agreement, which recognises that technical regulations and standards would not pose problems to international trade if the parties used international standards as the basis for their adoption. The TBT Agreement obliges parties, where 'relevant international standards exist or their completion is imminent', to use them as a basis for their technical regulations, except when they are an inappropriate means for the fulfilment of the legitimate objective pursued, for example 'because of fundamental climatic or geographical factors or fundamental technological problems'.⁶⁵ The TBT Agreement thus explicitly recognises that environmental protection could allow deviation from international standards. Such a deviation would, however, be subject to the basic obligation of the TBT Agreement to ensure that technical regulations should not create unnecessary obstacles to international trade. The TBT Agreement also imposes certain procedural requirements. The members must publish technical regulations in draft form where they are not based on international standards, or where such standards do not exist, and where the technical regulation or standard that is being adopted is likely to have a significant effect on trade.⁶⁶ To ensure that exporting countries, particularly developing countries, have time to adapt their products or methods of production to the requirements of the importing country, the Agreement requires that there should be a reasonable interval between the publication of technical regulations and their entry into force.⁶⁷ However, where 'urgent problems of safety, health, environmental protection or national security arise or threaten to arise for a Member', the member may fast-track the introduction of a technical regulation, provided that other members are notified immediately through the WTO Secretariat and given an

⁶⁰ 1868 UNTS 120, 15 April 1994, in force 1 January 1995. ⁶¹ TBT Agreement, Art. 1. ⁶² Art. 2.1.
⁶³ Art. 2.2. ⁶⁴ *Ibid.* ⁶⁵ Art. 2.4. ⁶⁶ Art. 2.9. ⁶⁷ Art. 2.12.

opportunity to present their comments in writing, discuss these comments upon request, and have their written comments and the results of discussions taken into account.⁶⁸ The TBT Agreement requires each party to set up enquiry points from which relevant information about technical regulations, standards and conformity assessment procedures can be obtained.⁶⁹

The TBT Agreement also recognises that developing countries are entitled to special treatment and that technical assistance should be made available to them.⁷⁰ Such special treatment could include, inter alia, taking into account their trade and financial needs in the preparation of technical regulations, standards, test methods and certification systems, and ensuring that the adoption of technical regulations does not create unnecessary obstacles to exports from developing countries.⁷¹ Additionally, the technical regulations and standards adopted should be based on scientific considerations and, to that end, in the event of a dispute arising, a WTO panel may establish a technical expert group to assist it with questions of a technical nature.⁷² This assists the panel by advising whether the measure is necessary for the protection of human, animal or plant life or health and whether it was based on a legitimate scientific judgment.

Committee on Trade and the Environment

At Marrakesh, in April 1994, ministers adopted a Decision on Trade and the Environment to coordinate policies in the fields of trade and the environment within the competence of the multilateral trading system.⁷³ The Decision called for the establishment of a Committee on Trade and the Environment (CTE) to take over the role of the previous GATT Group on Environmental Measures and International Trade,⁷⁴ which, despite being established in 1971, was not activated until October 1991, in preparation for UNCED. The terms of reference of the CTE are to identify the relationship between trade and environmental measures to promote sustainable development, and to recommend whether there is a need for modifications to the multilateral trading system to (a) enhance positive interaction between trade and environment, (b) avoid protectionist trade measures while ensuring responsiveness to the environmental objectives of Agenda 21 and the Rio Declaration, and (c) provide for surveillance of trade measures for environmental purposes, of trade-related aspects of environmental measures, and of effective implementation of 'multilateral disciplines' governing such measures. The Decision identified seven matters to be initially addressed by the CTE,⁷⁵ however, subsequent intergovernmental deliberations produced little progress on substantive issues.⁷⁶ The role of the CTE has been somewhat revitalised by the

⁶⁸ Art. 2.10. ⁶⁹ Art. 10. ⁷⁰ Art. 12. ⁷¹ Art. 12.3. ⁷² Art. 14.2 and Annex II.

⁷³ Communication from the Chairman of the GATT Trade Negotiations Committee, 'Decision on Trade and Environment', GATT Doc. MTN.TNC/W/141, 29 March 1994.

⁷⁴ GATT Doc. L/3622/Rev.1 and C/M/74.

⁷⁵ These issues were: (1) the relationship between the provisions of the multilateral trading system and trade measures for environmental purposes, including those in environmental agreements; (2) the relationship between certain environmental policies and measures and the multilateral trading system; (3) the relationship between the multilateral trading system and environmental charges and taxes and requirements for environmental purposes relating to products (including standards and technical regulations, packaging, labelling and recycling); (4) the transparency of trade measures for environmental purposes and environmental measures and requirements with significant trade effects; (5) the relationship between dispute settlement mechanisms in the multilateral trading system and those in environmental agreements; (6) the effect of environmental measures on market access; and (7) the issue of exports of domestically prohibited goods.

⁷⁶ See S. Charnovitz, 'A Critical Guide to the WTO's Report on Trade and Environment', 14 *Arizona Journal of International and Comparative Law* 341 (1997); G. Van Calster, 'The World Trade Organization Committee on Trade and Environment: Exploring the Challenges of the Greening of Free Trade', 5(2) *European Energy and Environmental Law Review* 44 (2011).

Doha negotiations taking place under its auspices on trade and environment.⁷⁷ Since Doha, the CTE has held a number of 'special sessions' on the issues raised by paragraph 31 of the Doha negotiating agenda. 'Regular' meetings of the CTE have addressed the matters raised in paragraph 32 of the Doha Declaration, which instructs the CTE in pursuing work on all items on its agenda within its current terms of reference, to give particular attention to three items: environmental measures and their effect on market access, especially in relation to developing countries; the relevant provisions of the TRIPs Agreement; and eco-labelling requirements.⁷⁸

WTO Dispute Settlement

In the event of a dispute between WTO members concerning environmental measures and agreements and trade obligations, the matter may be referred to dispute settlement in accordance with the procedures of the DSU.⁷⁹ The DSU introduced significant changes to the dispute settlement procedures formerly employed under the GATT. The Dispute Settlement Body (DSB) established under the WTO is responsible for administering the rules and procedures governing dispute settlement. The traditional approaches used under GATT 1947 (consultation, good offices, conciliation and mediation) remain in place,⁸⁰ with amended rules for the Dispute Settlement Panels and additional provisions on appellate review and arbitration. Panels assist the DSB in making recommendations or in giving the rulings provided for in the relevant agreements.⁸¹ Third parties having a substantial interest in a matter before a Panel are entitled to participate in Panel proceedings.⁸² Most significantly, Panel reports become binding unless one of the parties to the dispute decides to appeal or the DSB decides by consensus not to adopt the report.⁸³ Appeal is permitted only on points of law related to a Panel ruling. The appeal is made to a standing Appellate Body, which is composed of seven independent persons, three of whom serve on any one case.⁸⁴ Appellate Body reports must be adopted by the DSB and unconditionally accepted by the parties to the dispute unless the DSB decides by consensus not to adopt the report within thirty days of its issuance.⁸⁵ The DSU also provides for rules on surveillance of implementation of recommendations and rulings of the DSB, compensation and suspension of concessions, and binding arbitration by mutual agreement of the parties as an alternative means of dispute settlement.⁸⁶

Previous GATT Jurisprudence – Tuna/Dolphin

Prior to the entry into force of the DSU in January 1995, six GATT Panels had been established for disputes relating – directly or indirectly – to international environmental issues,⁸⁷ and many other Panel decisions provided guidance on interpretation of relevant provisions of the GATT.⁸⁸

⁷⁷ Declaration of the Fourth Ministerial Conference, Doha, Qatar, WT/MIN(01)/DEC/1, 20 November 2001, paras. 31–3.

⁷⁸ WTO CTE, Report (2010) of the Committee on Trade and Environment, 30 November 2010, para. 2. See also WTO CTE, Report by the Chairman to the Trade Negotiations Committee, 21 April 2011, TN/TE/20.

⁷⁹ Chapter 5, pp. 186–7. ⁸⁰ DSU, paras. 4 and 5. ⁸¹ *Ibid.*, para. 11. ⁸² *Ibid.*, para. 10.

⁸³ *Ibid.*, para. 16.3. ⁸⁴ *Ibid.*, para. 17. ⁸⁵ *Ibid.*, para. 17.14. ⁸⁶ *Ibid.*, paras. 21, 22 and 25.

⁸⁷ See *Canadian Tuna Case*, Report of the Panel adopted on 22 February 1982, BISD/29S/91; *US Chemicals Tax Case*, Report of the Panel adopted on 17 June 1987, BSD/34S/160; *US Processed Herring Case (Canada – Measures Affecting Exports of Unprocessed Herring and Salmon)*, Report of the Panel adopted on 22 March 1988, BISD/35S/98; *Thai Cigarette Case (Thailand – Restriction on Importation of and Internal Taxes on Cigarettes)*, Report of the Panel adopted on 7 November 1990, BISD/37S/200; *Tuna/Dolphin I*, 30 ILM 1594 (1991); *Tuna/Dolphin II*, 33 ILM, 839 (1994).

⁸⁸ *US – Section 337 of the Tariff Act of 1930*, Panel Report, 7 November 1989, BISD/36S/345; *EEC – Regulation on Imports of Parts and Components*, Panel Report, 16 May 1990, BISD/37S/132.

The most important of these decisions were two Panel reports issued in 1991 and 1994 concerning the dispute between Mexico and the United States over the latter's ban of imports of yellow-fin tuna from Mexico and 'intermediary nations', which had been caught in a manner that harmed dolphins.⁸⁹ The dispute was controversial and, unlike previous GATT panel decisions, subject to intense public scrutiny. The panel rulings in the *Tuna/Dolphin* cases were never formally adopted by the GATT Council,⁹⁰ and have now largely been overtaken by developments in subsequent WTO jurisprudence. In particular, the ruling of the 1991 Panel refuting the use of unilateral trade measures for environmental purposes on the basis that such measures jeopardise the multilateral framework for trade among parties and have an impermissible extrajurisdictional scope,⁹¹ together with the finding of the 1994 Panel that trade measures designed to force other parties to change their domestic environmental and health policies do not fall within the scope of Article XX,⁹² can no longer be regarded as good law. Nonetheless, the *Tuna/Dolphin* Panel decisions continue to raise uncertainties in areas where WTO law remains unsettled. For instance, there is the infamous ruling of the 1991 Panel that US import prohibitions were discriminatory and did not meet the requirements of Article III(4), which:

calls for a comparison of the treatment of imported tuna as a product with that of domestic tuna *as a product*. Regulations governing the taking of dolphins incidental to the taking of tuna could not possibly affect tuna as a product.⁹³

This finding continues to cast a shadow over the WTO compatibility of trade measures that distinguish between products based on the environmental consequences of their process and production methods (PPMs).⁹⁴ On a more positive note, the 1991 Panel upheld labelling requirements under the US 1990 Dolphin Protection Consumer Information Act (DPCIA) restricting the use of the label 'Dolphin Safe',⁹⁵ paving the way for the acceptance of some forms of

⁸⁹ *Tuna/Dolphin I*, 30 ILM 1594 (1991); *Tuna/Dolphin II*, 33 ILM 839 (1994). A detailed discussion of these cases is included in the second edition of this book, at pp. 953–61. See also M. Hurlock, 'The GATT, US Law and the Environment: A Proposal to Amend the GATT in Light of the Tuna/Dolphin Decision', 92 *Columbia Law Review* 2098 (1992); B. Kingsbury, 'The Tuna-Dolphin Controversy, the World Trade Organization and the Liberal Project to Reconceptualize International Law', 5 *Yearbook of International Environmental Law* 1 (1994); A. Ferrante, 'The Dolphin-Tuna Controversy and Environmental Issues', 5 *Journal of Transnational Law and Policy* 279 (1996).

⁹⁰ Under previous GATT dispute settlement rules, a consensus for adoption was required in order for a Panel report to be adopted. This permitted the losing party to block adoption of a report with which it did not agree.

⁹¹ *Tuna/Dolphin I* (1991), paras. 5.26 and 5.32.

⁹² *Tuna/Dolphin II* (1994), paras. 5.26 (on Art. XX(g)) and 5.39 (on Art. XX(b)). This interpretation, which has no apparent basis in the text of the GATT, created a test which could make it 'impossible for any nation to meet in the international trade arena' (C. Wofford, 'A Greener Future at the WTO: The Refinement of WTO Jurisprudence on Environmental Exceptions to GATT', 24 *Harvard Environmental Law Review* 563 at 579 (2000)).

⁹³ *Tuna/Dolphin I* (1991), para. 5.15 (emphasis added). ⁹⁴ *Ibid.*, paras. 5.19, 5.34, 5.40.

⁹⁵ *Ibid.*, para. 5.44. The DPCIA provided that, when a tuna product exported from or offered for sale in the US bears the optional label 'Dolphin Safe' or any similar label indicating it was fished in a manner not harmful to dolphins, this tuna product must not contain tuna harvested on the high seas by a vessel engaged in driftnet fishing, or harvested in the ETPO by a vessel using a purse-seine net, unless it is accompanied by documentary evidence showing that the purse-seine net was not intentionally deployed to encircle dolphins. The labelling provisions of the DPCIA took effect on 28 May 1991.

eco-labelling under international trade law.⁹⁶ Equally, the 1994 Panel, although rejecting the objective of unilateral environmental trade measures as GATT-inconsistent, nevertheless affirmed that a living species could constitute an 'exhaustible natural resource' for the purpose of Article XX(g),⁹⁷ and that the exceptions to Article XX did 'not spell out any limitation on the location of the living things to be protected'.⁹⁸

While the GATT Panel decisions in the *Tuna/Dolphin* dispute placed significant limitations on the use of unilateral trade measures by states to achieve environmental goals, their findings must now be read in the context of the subsequent jurisprudence of the WTO Appellate Body, including the key decisions described below.

Reformulated Gasoline Case (1996)

The *Reformulated Gasoline* case⁹⁹ provided the new WTO Appellate Body with its first case, and its first opportunity to consider trade measures purporting to pursue environmental goals. The dispute arose out of a complaint brought by Brazil and Venezuela against regulations promulgated under the US Clean Air Act (CAA) dealing with the standards for reformulated and conventional gasoline. The function of the regulations, known as the 'Gasoline Rule', was to establish 'cleanliness' standards for gasoline sold throughout the US, based on 1990 pollution levels. The Gasoline Rule made provision for the establishment of 1990 baselines for refiners, blenders and importers as an integral part of the process of compliance assessment for the programme. Domestic entities were permitted to establish individual baselines; no provision was made, however, to allow foreign refiners to establish individual baselines. Instead, all foreign refiners were required to use statutorily determined baselines as a basis for determining whether their gasoline met the requirements of the Gasoline Rule. The US argued that statutory baselines for foreign refiners were necessary because of the overwhelming administrative difficulties its Environmental Protection Agency (EPA) would face if required to verify compliance of foreign refiners with individual baselines.¹⁰⁰ The US also claimed that the measures were justified under the 'environmental exceptions' of Article XX as measures necessary for the protection of human health and relating to the conservation of an exhaustible natural resource (clean air).¹⁰¹

⁹⁶ However, in subsequent litigation Mexico again challenged the legality of US 'dolphin-safe' product labelling under the TBT Agreement. The latest ruling in the 'Tuna II' dispute was issued by the Appellate Body on 20 November 2015: *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, Article 21.5 Report of the Appellate Body, WTO/DS381/AB/RW, 20 November 2015. Difficult issues are also raised by negative eco-labelling, for example a requirement for a food to be labelled as 'containing GMOs' (see D. Morgan and G. Goh, 'Genetically Modified Food Labelling and the WTO Agreements', 13(3) *Review of European Community and International Environmental Law* 306 (2004)).

⁹⁷ *Tuna/Dolphin II* (1994), para. 5.13. ⁹⁸ *Ibid.*, paras. 5.15–5.17 (Art. XX(g)) and 5.31 (Art. XX(b)).

⁹⁹ *United States – Standards for Reformulated and Conventional Gasoline*, Report of the Panel, 29 January 1996, WT/DS2/R ('*Reformulated Gasoline*, Panel Report'); *United States – Standards for Reformulated and Conventional Gasoline*, Report of the Appellate Body, 29 April 1996, WT/DS2/AB/R ('*Reformulated Gasoline*, Appellate Body Report'), 35 ILM 603 (1996).

¹⁰⁰ *Reformulated Gasoline*, Panel Report, paras. 3.19 and 6.23.

¹⁰¹ *Ibid.*, para. 3.37. The United States also sought to justify its measures under Art. XX(d), but this argument was rejected by the Panel and its finding was not appealed by the United States.

The WTO Panel, at first instance, concluded that the Gasoline Rule was inconsistent with the national treatment obligation of Article III(4) and was not justified under Article XX(b) or (g).¹⁰² The Panel concluded that clean air was a 'natural resource' that could be 'depleted', and hence that a policy to reduce the depletion of clean air was a policy to conserve an exhaustible natural resource within the meaning of Article XX(g).¹⁰³ However, the Panel went on to find that, as there was no direct connection between the less favourable treatment of imported gasoline and the US objective of improving air quality, the baseline establishment rules could not be 'primarily aimed at' the conservation of a natural resource.¹⁰⁴

The subsequent US appeal to the Appellate Body was limited to the Panel's rulings in respect of the application of Article XX(g). The Appellate Body found a number of legal errors in the Panel's approach to Article XX(g). First, the Appellate Body noted that the Panel should have examined whether it was the measure adopted by the United States, rather than the any less favourable treatment it accorded to trading partners, which aimed at the conservation of resources.¹⁰⁵ Second, it found the Panel had erred in applying a least restrictive means test (i.e. effectively whether the measure was 'necessary') rather than interpreting the actual words of the exception which simply required that the measure 'relate to' conservation. While the Appellate Body did not expressly overrule the interpretation of 'relating to' as equivalent to 'primarily aimed at' advanced in previous GATT Panel decisions including the *Tuna/Dolphin* cases, it noted that the phrase 'primarily aimed at' was not itself treaty language and 'was not designed as a simple litmus test for inclusion or exclusion from Article XX(g)'.¹⁰⁶ In this regard, the Appellate Body concluded that the GATT 'is not to be read in clinical isolation from public international law', opening up the possibility of its reaching out to other rules of international law arising outside the WTO, including those in the environmental field.¹⁰⁷

Overtaking the Panel, the Appellate Body ruled that the Gasoline Rule was 'primarily aimed at' conservation as the baseline rules were necessary to allow scrutiny and monitoring of the level of compliance by refiners and others with the non-degradation requirements, which in turn were necessary to reach the objective of stabilising and preventing further deterioration of air quality.¹⁰⁸ The Appellate Body noted that the requirement in Article XX(g) for the measures to be made effective in conjunction with restrictions on domestic production and consumption amounted to a requirement of even-handedness that was satisfied in respect of the US measure.¹⁰⁹

The Appellate Body then went on to analyse the US measure under the *chapeau* to Article XX. In doing so, it made the following general observations about the interpretation of the *chapeau* that have guided subsequent case law:

¹⁰² The complainants also argued that the US measure amounted to a 'technical regulation' under the TBT Agreement, but the Panel concluded that, in view of its findings under the GATT, it was not necessary to decide on the issues raised under the TBT Agreement (*ibid.*, para. 6.43).

¹⁰³ *Ibid.*, para. 6.37. ¹⁰⁴ *Ibid.*, para. 6.40. ¹⁰⁵ *Reformulated Gasoline*, Appellate Body Report, 617–18.

¹⁰⁶ *Ibid.*, 623.

¹⁰⁷ *Ibid.*, 621; J. Cameron and K. R. Gray, 'Principles of International Law in the WTO Dispute Settlement Body', 50 *International and Comparative Law Quarterly* 248 (2001).

¹⁰⁸ *Reformulated Gasoline*, Appellate Body Report, 621. ¹⁰⁹ *Ibid.*, 625–6.

- It addresses not so much the questioned measure or its content but the manner in which the measure is applied.
- Its purpose and object are the prevention of abuse of the Article XX exceptions.
- It is animated by the principle that, while the exceptions of Article XX may be invoked as a matter of legal right, they should not be so applied as to frustrate or defeat the legal obligations of the holder of rights under the substantive rules of the GATT.
- Measures falling within the particular exceptions must be applied with due regard to the legal duties of the party claiming the exception and the legal rights of the other parties concerned.
- The burden of proof to justify the measure under the *chapeau* rests with the party advancing the measure.¹¹⁰

The Appellate Body noted that the US had alternative courses open to it to achieve its policy goal, namely:

- (1) setting statutory baselines for domestic refiners; or
- (2) allowing foreign refiners to use individual baselines.¹¹¹

The Appellate Body did not accept that the use of individual baselines for foreign refiners was precluded by the administrative difficulties that would face the EPA. The Appellate Body noted that there are 'established techniques for checking, verification, assessment and enforcement of data relating to imported goods, techniques which in many contexts are accepted as adequate to permit international trade', and concluded that the US must have been aware that for these established techniques to work 'co-operative arrangements with both foreign refiners and the foreign governments concerned would have been necessary and appropriate'.¹¹² It appeared to the Appellate Body that the US had not pursued the possibility of entering into cooperative arrangements with foreign governments, or, if it had, then it had not reached 'the point where it encountered governments that were unwilling to co-operate'.¹¹³

In respect of the application of statutory baselines to domestic refiners, the US had argued that this would have been physically and financially impossible because of the magnitude of the changes required in almost all US refineries, causing substantial delay in implementing the programme. The Appellate Body noted, however, that similar considerations did not appear to have been taken into account *vis-à-vis* foreign refiners.¹¹⁴

There had been two omissions on the part of the US, namely:

- (1) the failure to explore adequately the means (including, in particular, cooperation with the governments of Venezuela and Brazil) of mitigating the administrative problems relied on as justification by the US for rejecting individual baselines for foreign refiners; and
- (2) the failure to count the costs for foreign refiners that would result from the imposition of statutory baselines.

According to the Appellate Body, these resulted in the US measure giving rise to unjustifiable discrimination and amounting to a disguised restriction on international trade. The US measure thus could not be validated under Article XX(g).¹¹⁵ The Appellate Body went out of its way, however, to note that:

¹¹⁰ *Ibid.*, 626-9.

¹¹¹ *Ibid.*, 629.

¹¹² *Ibid.*, 631.

¹¹³ *Ibid.*

¹¹⁴ *Ibid.*, 632.

¹¹⁵ *Ibid.*, 633.

It is of some importance that the Appellate Body point out what this does not mean. It does not mean, or imply, that the ability of any WTO Member to take measures to control air pollution or, more generally, to protect the environment, is at issue. That would be to ignore the fact that Article XX of [GATT] contains provisions designed to permit important state interests – including the protection of human health, as well as the conservation of exhaustible natural resources – to find expression. The provisions of Article XX were not changed as a result of the Uruguay Round of Multilateral Trade Negotiations. Indeed, in the preamble to the WTO Agreement and in the Decision on Trade and Environment, there is specific acknowledgment to be found about the importance of co-ordinating policies on trade and the environment. WTO Members have a large measure of autonomy to determine their own policies on the environment (including its relationship with trade), their environmental objectives and the environmental legislation they enact and implement. So far as concerns the WTO, that autonomy is circumscribed only by the need to respect the requirements of the [GATT] and the other covered agreements.¹¹⁶

Shrimp/Turtle Cases (1998 and 2001)

The second 'environmental' case to come before the dispute resolution bodies of the WTO raised similar legal issues to those considered by GATT Panels in the *Tuna/Dolphin* dispute.¹¹⁷ The case concerned an import prohibition imposed by the United States on certain shrimp and shrimp products from India, Malaysia, Pakistan and Thailand, on the ground that they were harvested in a manner that adversely affected endangered sea turtles.¹¹⁸ In 1987, the United States had issued regulations (pursuant to its 1973 Endangered Species Act) requiring all US-registered shrimp trawl vessels to use approved turtle excluder devices (TEDs) in specified areas where there was a significant mortality of sea turtles in shrimp harvesting. TEDs allowed for shrimp to be harvested without harming other species, including sea turtles. The US regulations became fully effective in 1990, and were subsequently modified to require the general use of approved TEDs at all times and in all areas where there was a likelihood that shrimp trawling would interact with sea turtles. In 1989, the United States enacted section 609 of Public Law 101–162, which addressed the importation of certain shrimp and shrimp products. Section 609 required the US Secretary of State to negotiate bilateral or multilateral agreements with other nations for the protection and conservation of sea turtles. Section 609(b)(1) imposed (not later than 1 May 1991) an import ban on shrimp harvested with commercial fishing technology that might adversely affect sea turtles. Further regulatory guidelines were adopted in 1991, 1992 and 1996, governing, inter alia, annual certifications to be provided by harvesting nations. In broad terms, certification was to be granted only to those harvesting nations that provided documentary evidence of the adoption of a regulatory programme to protect sea turtles in the course of shrimp trawling. Such a

¹¹⁶ *Ibid.*, 634.

¹¹⁷ For a selection of the vast literature on these cases, see: D. Brack, 'The Shrimp-Turtle Case: Implications for the Multilateral Environmental Agreement-World Trade Organization Debate', 9 *Yearbook of International Environmental Law* 13 (1998); H. Mann, 'Of Revolution and Results: Trade and Environmental Law in the Afterglow of the Shrimp Turtle Case', 9 *Yearbook of International Environmental Law* 28 (1998); D. Wirth, 'Some Reflections on Turtles, Tuna, Dolphin and Shrimp', 9 *Yearbook of International Environmental Law* 40 (1998); R. Howse, 'The Appellate Body Rulings in the Shrimp/Turtle Case: A New Legal Baseline for the Trade and Environmental Debate', 27 *Columbia Journal of Environmental Law* 491 (2002); J. H. Knox, 'The Judicial Resolution of Conflicts Between Trade and the Environment', 28 *Harvard Environmental Law Review* 1 (2004).

¹¹⁸ AB-1998-4, 12 October 1998, 33 ILM 118 (1999).

regulatory programme had to be comparable to the programme of the US, with an average rate of incidental taking of sea turtles by their vessels comparable to that of US vessels. The 1996 guidelines further required that all shrimp imported into the United States had to be accompanied by a shrimp exporter's declaration attesting that the shrimp were harvested either in the waters of the nation certified under section 609, or under conditions that did not adversely affect sea turtles, including through the use of TEDs. Section 609 also included a provision calling upon the US Secretary of State, in consultation with the Secretary of Commerce, 'to initiate negotiations as soon as possible for the development of bilateral or multilateral agreements with other nations for the protection and conservation of . . . sea turtles'. Acting under this provision, the United States negotiated and concluded an Inter-American Convention for the Protection and Conservation of Sea Turtles with nations fishing for shrimp in the Western Atlantic. However, the United States made no attempt to negotiate a similar agreement with the complainants prior to the imposition of the import ban.

From a WTO perspective, the difficulty with the approach taken by the United States was that it was, in effect, applying its conservation laws extraterritorially to activities carried out within – or subject to the jurisdiction of – third states. This raised an issue of broader international legal interest, namely the circumstances (if any) in which a state may apply its conservation measures to activities taking place outside its territory or jurisdiction, including by non-nationals. The United States sought to justify its actions on the ground that the sea turtles it was seeking to protect were recognised in international law as being endangered.

The US legislation was challenged by India, Malaysia, Pakistan and Thailand. At first instance, a WTO Panel concluded that the import ban applied on the basis of section 609 was not consistent with Article XI(1) of GATT 1994 and could not be justified under any of the exceptions in Article XX of GATT 1994.¹¹⁹ The US appealed to the WTO Appellate Body, invoking in particular Article XX(g) to justify the legality of its measures. In appraising section 609 under Article XX of GATT 1994, the Appellate Body followed a three-step analysis. First, the Appellate Body asked whether the Panel's approach to the interpretation of Article XX was appropriate; it concluded that the Panel's reasoning was flawed and 'abhorrent to the principles of interpretation we are bound to apply'.¹²⁰ Second, the Appellate Body asked whether section 609 was 'provisionally justified' under Article XX(g). Invoking the concept of 'sustainable development', it found that it was so justified.¹²¹ Third, it asked whether section 609 met the requirements of the *chapeau* to Article XX, and concluded that it did not because the US actions imposed an 'unjustifiable discrimination' and an 'arbitrary discrimination' against shrimp to be imported from India, Malaysia, Pakistan and Thailand. As for the second step, the Appellate Body invoked the principle of 'sustainable development', as an aid to interpretation.

The Appellate Body's approach was premised upon an application of the 'customary rules of interpretation of public international law', as required by Article 3(2) of the DSU, which rules 'call for an examination of the ordinary meaning of the words of a treaty, read in their context, and in the light of the object and purpose of the treaty involved'.¹²² It was these customary rules that the Panel had failed to apply, leading to the conclusion at step one that the Panel's approach

¹¹⁹ *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Panel, WT/DS58/R, 15 May 1998.

¹²⁰ AB-1998-4, 12 October 1998, 33 ILM 118 (1999), paras. 112–24.

¹²¹ *Ibid.*, paras. 125–45.

¹²² *Ibid.*, para. 114.

was flawed. In relation to step two, the Appellate Body invoked the principle of sustainable development in determining whether the measures taken by the United States were 'provisionally justified'. As a threshold question, the Appellate Body had to decide whether section 609 was a measure *concerned with* the conservation of 'exhaustible natural resources', in the face of the argument that the term refers only to finite resources such as minerals, and not biological or renewable resources such as sea turtles (which, it was argued, fall to be covered by Article XX(b)). The Appellate Body rejected the argument, ruling that Article XX(g) extended to measures taken to conserve exhaustible natural resources, whether living or non-living, and that the sea turtles involved here 'constituted "exhaustible natural resources" for the purpose of Article XX(g)'.¹²³ In reaching that conclusion, the Appellate Body stated that Article XX(g) had to be read by a treaty interpreter 'in the light of contemporary concerns of the community of nations about the protection and conservation of the environment'.¹²⁴

Referring to the Preamble to the 1994 WTO Agreement, the Appellate Body noted that its signatories were 'fully aware of the importance and legitimacy of environmental protection as a goal of national and international policy' and that the Preamble 'explicitly acknowledges "the objective of *sustainable development*"'.¹²⁵ This, said the Appellate Body, was a concept that 'has been generally accepted as integrating economic and social development and environmental protection'.¹²⁶ According to the Appellate Body, this conclusion was supported by modern international conventions and declarations, including the UN Convention on the Law of the Sea.¹²⁷ It followed that the sea turtles at issue were an 'exhaustible natural resource' and highly migratory animals, passing in and out of the waters subject to the rights of jurisdiction of various coastal states on the high seas.¹²⁸ The Appellate Body observed:

Of course, it is not claimed that all populations of these species migrate to, or traverse, at one time or another, waters subject to United States jurisdiction. Neither the appellant nor any of the appellees claims any rights of exclusive ownership over the sea turtles, at least not while they are swimming freely in their natural habitat – the oceans. We do not pass upon the question of whether there is an implied jurisdictional limitation in Article XX(g), and if so, the nature or extent of that limitation. We note only that in the specific circumstances of the case before us, there is a sufficient nexus between the migratory and endangered marine populations involved and the United States for the purpose of Article XX(g).¹²⁹

The concept of 'sustainable development' was not expressly invoked to justify this potentially far-reaching conclusion as to the nexus between the sea turtles and the United States. Nevertheless, the concept appeared to inform that conclusion, apparently establishing the necessary link between the interest of the United States in the proper conservation of a distant natural resource located from time to time outside its jurisdiction, and the finding that section 609 was

¹²³ *Ibid.*, paras. 131 and 134. ¹²⁴ *Ibid.*, para. 129. ¹²⁵ *Ibid.*

¹²⁶ *Ibid.*, para. 129, at n. 107 and the accompanying text. The Preamble to the WTO Agreements provides, inter alia, that 'the Parties to this Agreement, recognising that their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means of doing so in a manner consistent with their respective needs and concerns at different levels of economic development.'

¹²⁷ *Ibid.*, para. 130, citing Art. 56(1)(a) of the 1982 UNCLOS. ¹²⁸ *Ibid.*, paras. 132 and 133. ¹²⁹ *Ibid.*, para. 133.

'provisionally justified' under Article XX(g). Although the Appellate Body claimed that it did 'not pass upon the question of whether there is an implied jurisdictional limitation in Article XX(g)', its conclusion appears hardly consistent with such a limitation. The concept of 'sustainable development' (and the need to integrate economic and social development and environmental protection) appears to have been implicitly invoked to extend (by interpretation) the jurisdictional scope of Article XX(g). This marked a significant move away from the approach of the earlier *Tuna/Dolphin* panels.

The third step of the Appellate Body's analysis addressed the issue of whether section 609 was consistent with the requirements of the *chapeau* to Article XX. Again, the Appellate Body invoked 'sustainable development', this time in the context of its conclusion that section 609 was an 'unjustifiable' discrimination. The Appellate Body revisited the Preamble to the WTO Agreement, noting that it demonstrated that WTO negotiators recognised 'that optimal use of the world's resources should be made in accordance with the objective of sustainable development', and that the preambular language, including the reference to sustainable development

must add colour, texture and shading to our interpretation of the agreements annexed to the WTO Agreement, in this case the GATT 1994. We have already observed that Article XX(g) of the GATT 1994 is appropriately read with the perspective embodied in the above preamble.¹³⁰

In support of the relevance of 'sustainable development' to the process of interpretation of the WTO Agreements, the Appellate Body invoked the Decision by ministers at Marrakesh to establish a permanent Committee on Trade and the Environment. That Decision refers, in part, to the consideration that 'there should not be . . . any policy contradiction between . . . an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment, and the promotion of sustainable development on the other'.¹³¹ The Appellate Body noted that the terms of reference for the establishment by this Decision of the Committee on Trade and the Environment (which made further reference to the concept of sustainable development) specifically referred to Principles 3 and 4 of the Rio Declaration on Environment and Development.¹³²

It appears that 'sustainable development' informed the conclusion that the US measures constituted an unjustifiable discrimination: according to the Appellate Body, section 609 established a rigid standard by which US officials determined whether or not countries would be certified, and it was not acceptable 'for one WTO Member to use an economic embargo to require other Members to adopt essentially the same comprehensive regulatory programme, to achieve a certain policy goal, as that in force within that Member's territory, without taking into consideration different conditions which may occur in the territories of those other Members'.¹³³ Shrimp caught using identical methods to those employed in the United States had been excluded from

¹³⁰ *Ibid.*, para. 153. ¹³¹ *Ibid.*, para. 154.

¹³² Principle 3 of the Rio Declaration provides: '[T]he right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.' Principle 4 states: 'In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process, and cannot be considered in isolation from it.'

¹³³ AB-1998-4, 12 October 1998, 33 ILM 118 (1999), para. 164.

the US market solely because they had been caught in waters of countries that had not been certified by the United States, and the resulting situation was 'difficult to reconcile with the declared [and provisionally justified] policy objective of protecting and conserving sea turtles'.¹³⁴ This suggested that the United States was more concerned with effectively influencing WTO members to adopt essentially the same comprehensive regulatory regime as that applied by the United States to its domestic shrimp trawlers. Moreover, the United States had not engaged the appellees 'in serious, across-the-board negotiations with the objective of concluding bilateral or multilateral agreements for the protection and conservation of sea turtles, before enforcing the import prohibition'.¹³⁵ The failure to have *a priori* consistent recourse to diplomacy as an instrument of environmental protection policy produced 'discriminatory impacts on countries exporting shrimp to the US with which no international agreements [were] reached or even seriously attempted'.¹³⁶ The fact that the United States negotiated seriously with some but not other WTO members that exported shrimp to the United States had an effect that was 'plainly discriminatory and unjustifiable'. Further, different treatment of different countries' certification was observable in the differences in the levels of efforts made by the United States in transferring the required TED technology to specific countries.¹³⁷ Moreover, the protection and conservation of highly migratory species of sea turtles demanded 'concerted and co-operative efforts on the part of the many countries whose waters [were] traversed in the course of recurrent turtle migrations'.¹³⁸ Such 'concerted and co-operative efforts' were required by, inter alia, the Rio Declaration (Principle 12), Agenda 21 (para. 2.22 (i)), the 1992 Biodiversity Convention (Article 5) and the 1979 Berne Convention. Further, the 1996 Inter-American Convention for the Protection and Conservation of Sea Turtles provided a 'convincing demonstration' that alternative action was reasonably open to the United States other than the unilateral and non-consensual procedures established by section 609.¹³⁹ And, finally, while the United States was a party to the 1973 CITES, it had not attempted to raise the issue of sea turtle mortality in relevant CITES committees, and had not signed the 1979 Berne Convention or the 1982 UNCLOS, or ratified the 1992 Biodiversity Convention.¹⁴⁰

The Appellate Body report in the *Shrimp/Turtle* dispute was adopted by the WTO's DSB on 6 November 1998, together with a recommendation that the United States bring the import prohibition into conformity with its obligations under the WTO Agreement. In implementing the recommendations and rulings of the DSB, the United States did not amend section 609, leaving its import prohibition on shrimp from uncertified states in effect. However, the US Department of State issued 'Revised Guidelines for the Implementation of Section 609 of Public Law 101-162 Relating to the Protection of Sea Turtles in Shrimp Trawl Fishing Operation'. Under the Revised Guidelines, a country may apply for certification even if it does not require the use of TEDs, provided it demonstrates that it has implemented, and is enforcing, a 'comparably effective' regulatory programme to protect sea turtles without the use of TEDs.¹⁴¹ Malaysia challenged the

¹³⁴ *Ibid.*, para. 165. ¹³⁵ *Ibid.*, para. 166. ¹³⁶ *Ibid.*, para. 167. ¹³⁷ *Ibid.* ¹³⁸ *Ibid.*, para. 168.

¹³⁹ *Ibid.*, para. 170. The 1996 Convention established obligations to reduce harm to sea turtles and encouraged the appropriate use of TEDs (Art. IV(2)(h)). It also provided expressly that in implementing the Convention the parties should act in accordance with the WTO Agreement, including in particular the TBT Agreement and Art. XI of GATT 1994 (Art. XV).

¹⁴⁰ *Ibid.*, para. 171 and n. 174 (and the accompanying text).

¹⁴¹ *United States – Import Prohibition on Certain Shrimp and Shrimp Products*, Recourse to Article 21.5 of the DSU by Malaysia, Report of the Appellate Body, 22 October 2001, WT/DS58/AB/RW ('*Shrimp/Turtle*, Appellate Body Recourse Report'), para. 6 (requiring the US Department of State 'to take fully into account any demonstrated

Revised Guidelines before another WTO Panel, which found them to be in violation of Article XI but justified under Article XX as long as the conditions stated in the findings of the Panel's report, and in particular 'the ongoing serious good faith efforts to reach a multilateral agreement' remained satisfied.¹⁴²

Malaysia subsequently appealed the Panel's ruling to the Appellate Body, on two principal grounds: first, the duty of the United States to pursue international cooperation in protecting and conserving endangered sea turtles prior to implementing unilateral trade measures, and, second, whether the Revised Guidelines were sufficiently 'flexible' to meet the requirements of the Article XX *chapeau*. In its rulings on these issues, the Appellate Body clarified its approach to unilateral trade measures taken to achieve environmental goals. In relation to the duty to pursue international cooperation, Malaysia asserted that the United States should have negotiated *and concluded* an international agreement on the protection and conservation of sea turtles before imposing a unilateral import prohibition.¹⁴³ In response, the United States countered that it had made serious, good faith efforts to secure a multilateral sea turtle conservation agreement among Indian Ocean and Southeast Asian states.¹⁴⁴ The Appellate Body confirmed that the requirement for 'serious across-the-board negotiations' did not imply that agreements on environmental resources had to be actually concluded, since that would, in effect, grant a veto to individual states.¹⁴⁵ The Appellate Body considered that such a requirement would not be reasonable:

For a variety of reasons, it may be possible to conclude an agreement with one group of countries but not another. The conclusion of a multilateral agreement requires the co-operation and commitment of many countries. In our view, the United States cannot be held to have engaged in 'arbitrary or unjustifiable discrimination' under Article XX solely because one international negotiation resulted in an agreement while another did not.¹⁴⁶

Although the *conclusion* of an agreement with all affected countries was preferable, it was not required: what was necessary was that negotiations in different fora should be *comparable*.¹⁴⁷ The Appellate Body ruled that the Panel had correctly concluded that the efforts made by the United States in the Indian Ocean and Southeast Asia region constituted serious, good faith efforts to secure multilateral agreement on sea turtle conservation in that region, and the US measure was not being applied in a manner constituting unjustifiable or arbitrary discrimination.¹⁴⁸

On the issue of the 'flexibility' of the Revised Guidelines to take account of the differing conditions prevailing in other WTO members' territories, Malaysia argued that the Revised Guidelines breached the Article XX *chapeau* by 'unilaterally' imposing US domestic standards on exporters.¹⁴⁹ The Appellate Body rejected this argument, noting that the Revised Guidelines contained provisions permitting the US authorities to take into account the specific conditions

differences between the shrimp fishing conditions in the United States and those in other nations, as well as information available from other sources'). Under the Revised Guidelines, an exporting country may also be certified if its shrimp fishing environment does not pose a threat of incidental capture of sea turtles.

¹⁴² *United States – Import Prohibition on Certain Shrimp and Shrimp Products*, Recourse to Article 21.5 of the DSU by Malaysia, Report of the Panel, 15 June 2001, WT/DS58/RW, para. 6.1 ('*Shrimp/Turtle*, Panel Recourse Report').

¹⁴³ *Shrimp/Turtle*, Appellate Body Recourse Report, para. 115. ¹⁴⁴ *Ibid.* ¹⁴⁵ *Ibid.*, para. 123. ¹⁴⁶ *Ibid.*

¹⁴⁷ *Ibid.*, paras. 122 and 124. ¹⁴⁸ *Ibid.*, para. 134. ¹⁴⁹ *Ibid.*, para. 135.

of Malaysian shrimp production, and of the Malaysian sea turtle conservation programme, should Malaysia decide to apply for certification.¹⁵⁰ The Appellate Body found that the Revised Guidelines, on their face, permitted a degree of flexibility that would enable the United States to consider the particular conditions prevailing in Malaysia if and when Malaysia applied for certification.¹⁵¹ The Appellate Body's approach appeared to be intended to address concerns raised in the wake of its decisions in *Reformulated Gasoline* and the first phase of the *Shrimp/Turtle* dispute, to the effect that countries wishing to adopt unilateral trade measures for environmental purposes would face an extremely onerous task if required to consider the particular conditions prevailing in every potentially affected member before acting.

*Asbestos Case (2000)*¹⁵²

Closely following the Appellate Body's decision in the first phase of the *Shrimp/Turtle* case was a dispute involving a challenge by Canada to a French decree concerning asbestos and products containing asbestos, raising issues over the intersection of trade and health concerns. In the *Measures Affecting Asbestos and Asbestos-Containing Products* case, Canada requested a WTO Panel to consider the consistency of a French decree with the TBT Agreement, and Articles III and XI of the GATT.¹⁵³ It also alleged, under Article XXIII(1) (b) of the GATT, that the French decree nullified or impaired advantages accruing to Canada directly or indirectly under the WTO Agreement, or impeded the attainment of an objective of that Agreement. The French decree generally banned the use of asbestos and asbestos-containing products, subject to time-limited exceptions for certain existing materials, products or devices containing chrysotile fibres. In particular, chrysotile fibres and products containing them could continue to be used but only where no substitute was available which 'in the present state of scientific knowledge, poses a lesser occupational health risk than chrysotile fibre to workers handling those materials, products or devices' and 'provides all technical guarantees of safety corresponding to the ultimate purpose of the use thereof'.¹⁵⁴

¹⁵⁰ *Ibid.*, paras. 146–7. In addition, the provisions of the Revised Guidelines stated that the import prohibitions imposed under section 609 did not apply to shrimp or products of shrimp 'harvested in any other manner or under any other circumstances that the Department of State may determine, following consultations with the [United States National Marine Fisheries Services], does not pose a threat of the incidental taking of sea turtles'.

¹⁵¹ *Ibid.*, para. 148.

¹⁵² For a selection of articles discussing the case see: D. A. Wirth, 'GATT – Technical Barriers to Trade Agreement – Asbestos Import Ban', 96 *American Journal of International Law* 435 (2002); S. Chamovitz, 'The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality', 27 *Yale Journal of International Law* 59 (2002); R. S. Carruth and B. D. Goldstein, 'The Asbestos Case: A Comment on the Appointment and Use of Nonpartisan Experts in World Trade Organization Dispute Resolution Involving Health Risk', 24(2) *Risk Analysis* 471 (2004); M. Footer and S. Zia-Zarifi, 'European Communities – Measures Affecting Asbestos and Asbestos-Containing Products: The World Trade Organization on Trial for Its Handling of Occupational Health and Safety Issues', 3 *Melbourne Journal of International Law* 120 (2002).

¹⁵³ *European Communities – Measures Affecting Asbestos and Asbestos-Containing Products*, Report of the Panel, WT/DS135/R, 18 September 2000 ('*Asbestos*, Panel Report'); *European Communities – Measures Affecting Asbestos and Asbestos-Containing Products*, Report of the Appellate Body, WT/DS135/AB/R, 12 March 2001 ('*Asbestos*, Appellate Body Report').

¹⁵⁴ Décret No. 96–1133 relatif à l'interdiction de l'amiante, pris en application du code de travail et du code de la consommation, *Journal Officiel*, 26 December 1996.

The WTO Panel report in the case found that the law violated Article III(4) of the GATT, but held that the French measures could be justified under Article XX(b).¹⁵⁵ In the Appellate Body's subsequent determination of Canada's appeal, the most important aspects of its rulings, for present purposes, related to its interpretation of the 'like products' requirement in Article III(4). The question raised was whether chrysotile asbestos fibres were 'like' certain other fibres, namely PVA fibres or cellulose and glass fibres (collectively referred to as PCG fibres), and whether cement-based products containing asbestos fibres were 'like' those containing one of the PCG fibres. The Panel had concluded that the two categories of products – one containing asbestos and the other containing PCG alternatives – were 'like' within the meaning of Article III(4). The EU appealed, arguing that the 'likeness' test in Article III(4) called for an analysis of the health objective of the regulatory distinction made in the measure between asbestos fibres and other fibres. The Appellate Body accepted the EU's arguments and reversed the Panel's finding.

The Appellate Body considered the term 'like products' in Article III(4) by reference to dictionary definitions, the surrounding GATT provisions, and the general principle articulated in Article III(1) that members should ensure equality of competitive conditions for imported products in relation to domestic products. It concluded that 'likeness' was 'a determination about the nature and extent of a competitive relationship between and among products', and had to be made on a case-by-case basis.¹⁵⁶ The Appellate Body adopted the criteria taken by previous GATT Panels, and the WTO Panel in the *Asbestos* case, to assess the question of likeness, namely: (1) the properties, nature and quality of the products; (2) the end uses of the products; (3) consumers' tastes and habits in respect of the products; and (4) the tariff classification of the products.¹⁵⁷ In this case, for asbestos fibres, 'evidence relating to the health risks associated with a product' could be pertinent in an examination of 'likeness' and needed to be evaluated under the criteria of physical properties, and of consumers' tastes and habits, having regard to their carcinogenicity.¹⁵⁸ The evidence had established that the products in issue were physically different, and, to overcome an indication that products were *not* 'like', 'a higher burden is placed on complaining members to establish that, despite the pronounced physical differences, there is a competitive relationship between the products such that *all* of the evidence, taken together, demonstrates that the products are "like" under Article III: (4) of the GATT 1994'.¹⁵⁹ Considering the health risks posed by asbestos products, and the implications of such for the physical properties of the products and consumers' preferences in respect of them, the Appellate Body

¹⁵⁵ *Asbestos*, Panel Report, paras. 8.158 and 8.241. The Panel also found that the asbestos ban did not amount to a TBT regulation. This finding was reversed by the Appellate Body but it did not go on to complete the analysis under the TBT Agreement as it concluded that it did not have an adequate factual basis in the findings of the Panel to enable it to do so.

¹⁵⁶ *Asbestos*, Appellate Body Report, paras. 99 and 101. The Appellate Body noted, however, that, even if two products were 'like', it did not always follow that the measure at issue was inconsistent with Art. III(4): the complaining member must still establish that the measure accorded to the group of 'like' imported products 'less favourable treatment' than it accorded to the group of 'like' domestic products (paras. 100 and 103).

¹⁵⁷ *Ibid.*, para. 102 (but noting that they were simply tools which were not treaty-mandated and did not form a closed list of criteria that would determine the legal characterisation of products). The criteria are derived from the Report of the Working Party on Border Tax Adjustments, adopted on 2 December 1970, BISD/18S/97, para. 18.

¹⁵⁸ *Ibid.*, paras. 113 and 114.

¹⁵⁹ *Ibid.*, para. 118. The Appellate Body criticised the Panel for failing to consider relevant consumer preferences, noting that 'consumers' tastes and habits regarding fibres, even in the case of commercial parties, such as manufacturers, are very likely to be shaped by the health risks associated with a product which is known to be highly carcinogenic' (*ibid.*, para. 122).

found that the evidence relied on by the Panel in finding 'likeness' was insufficient, and reversed the Panel's finding on this point.¹⁶⁰

As to the meaning of 'necessity' under Article XX(b), the Appellate Body rejected Canada's three grounds of challenge. It ruled that Article XX(b) did not require the Panel to 'quantify' the risk associated with asbestos fibres: it was sufficient for the risk to be evaluated either in quantitative or qualitative terms.¹⁶¹ On the question of the level of health protection selected by France in its law, the Appellate Body reiterated that WTO members have an undisputed right to determine their own level of health protection, and that the 'controlled use' of asbestos fibres and asbestos-containing products (as proposed by Canada) was not an alternative measure that would achieve the end sought by France. In determining whether any alternative measure was 'reasonably available', several factors had to be taken into account, besides the difficulty of implementation, including the interests or values pursued by the measure. The health protection objective pursued by the measure was a value 'both vital and important in the highest degree', and France could not reasonably be expected to employ any alternative measure if the measure would involve a continuation of the very risk that the law sought to halt because the alternative measure would effectively prevent France from achieving its chosen level of health protection.¹⁶²

Finally, the Appellate Body made important observations about the standard of proof to be applied by Panels when evaluating scientific evidence advanced in justification of a measure taken under Article XX(b). It rejected Canada's argument that any such claim had to be made on the basis of the 'preponderant' weight of the evidence, ruling that it was sufficient for a member to rely, in good faith, on scientific sources which, at the time, may represent a divergent, but qualified and respected, opinion. Thus, a member was not obliged automatically to follow what, at any given time, constituted majority scientific opinion.¹⁶³

Brazil Retreaded Tyres Case (2007)

This case concerned a challenge by the EU to a Brazilian ban on imports of retreaded tyres as an instance of disguised protectionism.¹⁶⁴ The WTO Panel found that the Brazilian ban was inconsistent with Article XI of GATT.¹⁶⁵ However, Brazil argued that its measure was 'necessary' under Article XX(b) to protect human, animal and plant life and health given the human health and biodiversity risks posed by the accumulation of waste tyres in its territory. In particular, Brazil argued that tyres contain polluting materials, which on incineration, release toxic and contaminating gases. As Brazil already has a large amount of tyre waste in its territory, it asserted that additional amounts, resulting from the import of retreaded tyres, would exacerbate existing environmental and health risks, such as the spread of malaria and dengue fever. In determining whether the ban was 'necessary', the Panel had applied the test that had been laid

¹⁶⁰ *Ibid.*, paras. 126 and 128. See also the separate concurring statement (at paras. 152–4), indicating the willingness of one member of the Appellate Body to attribute even greater significance to the health risks of asbestos-containing products, not requiring evidence concerning end-uses and consumer preferences, and questioning the necessity or appropriateness of the majority's adoption of a 'fundamentally' economic interpretation of the 'likeness' criterion.

¹⁶¹ *Ibid.*, para. 167. ¹⁶² *Ibid.*, paras. 172 and 174. ¹⁶³ *Ibid.*, para. 178.

¹⁶⁴ See K. R. Gray, 'Brazil – Measures Affecting Imports of Retreaded Tyres', 102(3) *American Journal of International Law* 610 (2008); I. Van Damme, 'III. Appellate Body Report, Brazil – Measures Affecting Imports of Retreaded Tyres, Adopted on 17 December 2007', 57 *International and Comparative Law Quarterly* 710 (2008).

¹⁶⁵ *Brazil – Measures Affecting Imports of Retreaded Tyres*, WT/DS332/R, 12 June 2007, Report of the Panel ('Retreaded Tyres Panel Report'), para. 8.1.

down by the Appellate Body in other cases concerning Article XX(b) and (d),¹⁶⁶ and Article XIV (a) of GATS.¹⁶⁷ This test requires that:

[the] necessity of a measure should be determined through 'a process of weighing and balancing a series of factors', which usually includes the assessment of the following three factors: the relative importance of the interests or values furthered by the challenged measure, the contribution of the measure to the realization of the ends pursued by it and the restrictive impact of the measure on international commerce.¹⁶⁸

Applying the 'weighing and balancing' test in respect of the Brazilian ban, the Panel concluded that that the measure's 'objective of protecting human health and life against life-threatening diseases, such as dengue fever and malaria, is both vital and important in the highest degree'. Further, in respect of the protection of animal and plant life and health, the Panel found that 'the objective of protection of animal and plant life and health should also be considered important'.¹⁶⁹

Reviewing the Panel's findings, the Appellate Body agreed with the Panel on the importance of the values protected by the Brazilian measure, including environmental protection.¹⁷⁰ It concluded that there was nothing erroneous in the Panel's reasoning that, in light of the importance of the interests protected by the important ban, the contribution of the ban to the achievement of its objective outweighed its trade-restrictiveness.¹⁷¹ Moreover, even though the Appellate Body recognised that a ban is a severe form of trade restriction – indicating that the measure should be 'apt to make a material contribution to the achievement of its objective'¹⁷² – its assessment of the link between the health and environmental goals of the Brazilian measure and the regulatory approach taken was cognisant of the challenges involved in dealing with complex health and environmental problems. It observed that:

certain complex public health or environmental problems may be tackled only with a comprehensive policy comprising a multiplicity of interacting measures. In the short-term, it may prove difficult to isolate the contribution to public health or environmental objectives of one specific measure from those attributable to the other measures that are part of the same comprehensive policy. Moreover, the results obtained from certain actions – for instance, measures adopted in order to attenuate global warming and climate change, or certain preventive actions to reduce the incidence of diseases that may manifest themselves only after a certain period of time – can only be evaluated with the benefit of time.¹⁷³

¹⁶⁶ Art. XX(d) provides an exception for measures 'necessary to secure compliance with laws or regulations' relating to customs enforcement, the enforcement of certain types of monopolies, the protection of patents, trademarks and copyright and the prevention of deceptive practices. On the interpretation of the concept of necessity in this Article, see *Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, Report of the WTO Appellate Body, WT/DS169/AB/R, 11 December 2000, para. 164.

¹⁶⁷ In the context of this provision, which also includes a necessity test, the Appellate Body indicated in *United States – Measures Affecting Cross-Border Supply of Gambling and Betting Services*, Report of the WTO Appellate Body, WT/DS285/AB/R, 7 April 2005, that the analysis 'begins with an assessment of the "relative importance" of the interests or values furthered by the challenged measure' (para. 306).

¹⁶⁸ *Retreaded Tyres*, Panel Report, para. 7.104. ¹⁶⁹ *Ibid.*, paras. 7.108–7.112.

¹⁷⁰ *Brazil – Measures Affecting Imports of Retreaded Tyres*, Report of the Appellate Body, WT/DS332/AB/R, 3 December 2007 ('*Retreaded Tyres*, Appellate Body Report'), para. 179.

¹⁷¹ *Ibid.* ¹⁷² *Ibid.*, para. 150.

¹⁷³ *Ibid.*, para. 151. See also *China – Measures related to the Exportation of Various Raw Materials*, Panel Reports, WT/DS394/R; WT/DS395/R; WT/DS398/R (5 July 2011), paras. 7.481, 7.485.

In this context, the Appellate Body indicated that the evidence or data relied upon by the Panel might pertain 'to the past or the present', or might consist of 'quantitative projections in the future, or qualitative reasoning based on a set of hypotheses that are tested and supported by sufficient evidence'.¹⁷⁴

Ultimately, however, both the Panel and, on a slightly different basis, the Appellate Body, found that the Brazilian ban on retreaded tyres did not satisfy the requirements of the Article XX *chapeau*. The Appellate Body found that an exemption from the ban extended by Brazil to its trading partners in the South American common market (MERCOSUR) in line with a ruling of a MERCOSUR arbitral tribunal, but not to other WTO members, meant that the import ban was 'applied in a manner that constitutes arbitrary or unjustifiable discrimination'.¹⁷⁵ On this basis, the Brazilian measure was found to be inconsistent with the provisions of the GATT.

Tuna/Dolphin II (2012)

This dispute involved a resurgence of the long-running *Tuna/Dolphin* controversy between Mexico and the United States, focusing on US requirements for 'dolphin safe' labelling of imported tuna under the 1990 Dolphin Protection Consumer Information Act (DPCIA), as interpreted by US courts.¹⁷⁶ Under the US regulations, tuna caught in the Eastern Tropical Pacific (ETP) Ocean using purse seine nets that posed a risk to dolphins was ineligible for use of the dolphin-safe label.

Mexico challenged the US requirements under the TBT Agreement arguing that the dolphin safe labelling programme was a 'technical regulation'. Both the WTO Panel and the Appellate Body agreed with this argument, despite the fact that use of the dolphin-safe labels was not mandatory in the sense that tuna could be sold in the United States without such a label (conversely, only tuna meeting the requirements of the US legislation could be labelled and sold as 'dolphin-safe' in the US market).¹⁷⁷ The Appellate Body also upheld Mexico's argument that the US labelling requirement treated Mexican-caught tuna less favourably in breach of Article 2.1 of the TBT Agreement because the measure was not 'even-handed' in the sense of being underpinned by legitimate reasons for different requirements applied to different fisheries and fishing methods.¹⁷⁸

A key question in the dispute was whether the United States had based its dolphin-safe labelling requirements on an 'international standard', in this case, the 1999 Agreement on International Dolphin Conservation Program (AIDCP) concluded under the Inter-American Tropical Tuna Commission to which both the United States and Mexico are party. The AIDCP also established a dolphin-safe scheme but one that conditioned granting of the dolphin-safe label on the satisfaction of certain quantitative criteria (e.g. mortality and injury rates to dolphins) rather than the harvesting method used in catching tuna. If the AIDCP requirements constituted an 'international standard' then Article 2.4 of the TBT Agreement required the United States to base its technical regulation on that standard or justify the divergence. The Appellate Body ruled that because the AIDCP was not open to automatic accession by any WTO

¹⁷⁴ *Ibid.* ¹⁷⁵ *Ibid.*, para. 228.

¹⁷⁶ Trish Kelly, 'Tuna-Dolphin Revisited', 48(3) *Journal of World Trade Law* 501 (2014).

¹⁷⁷ *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, Report of the Appellate Body, WT/DS381/AB/R (16 May 2012), para. 199.

¹⁷⁸ *Ibid.*, para. 232.

member, it was not an international standardising organisation and hence its dolphin-safe regime did not constitute an 'international standard' for the purposes of Article 2.4.¹⁷⁹ As noted, this decision sets a high threshold for environmental treaty bodies in adopting TBT-consistent standards.¹⁸⁰

In 2013 the United States introduced new regulations that essentially applied its stringent requirements regarding purse seine netting and certification of dolphin mortality to fisheries outside the ETP in an attempt to remove any discrimination between the application of its measures in different fisheries. The dispute, however, remains unresolved, with Mexico applying for rulings that the new US measures remain in violation of the TBT and GATT. Further compliance proceedings have been requested by both the United States and Mexico and are currently afoot.¹⁸¹

Assessment

Overall, the 'trade and environment' disputes decided under the WTO dispute resolution system have tended to give greater weight to the environmental and health concerns reflected in the Article XX(b) and (g) exceptions than previous GATT case law. Recent decisions, such as the *EC – Seal Products* case, which involved a ban on the import of seal products due to public animal welfare concerns, suggest other Article XX exceptions may be available to justify environmental trade measures, such as Article XX(a) for measures 'necessary to protect public morals'.¹⁸² In interpreting the provisions of the GATT 1994 and other WTO Agreements such as the TBT Agreement, the Appellate Body has demonstrated a commitment to refer to general international law arising outside the WTO system, including multilateral environmental treaties. It has also proposed a clearer legal framework for analysis of measures under Article XX and has clarified that the purpose of the *chapeau* is to prevent protectionist abuse of the Article's exceptions, not to limit the use of measures that are genuinely intended to achieve environmental objectives. In the *Reformulated Gasoline* and *Shrimp/Turtle* cases, the Appellate Body identified two pre-conditions necessary to ensure that a member's environmental measures do not fall foul of the requirements of the Article XX *chapeau*: first, the need to make serious efforts to secure a cooperative solution to the problem, prior to resorting to unilateral action; and, second, the need to consider the conditions prevailing in other members' territories in designing any trade-restricting measure. The *Asbestos* case provides important guidance on the meaning of 'likeness', indicating a willingness to permit greater consideration of potential health and environmental risks associated with a product in determining 'likeness' for the purpose of Article III(4). The *Retreaded Tyres* case – the first involving a challenge to environmental measures maintained by a developing country – demonstrated the Appellate Body's acceptance of the importance of values of health and environmental protection and its sensitivity to some of the difficulties involved in seeking to regulate complex public health or environmental problems, including

¹⁷⁹ *Ibid.*, para. 399. ¹⁸⁰ Dupuy and Viñuales, *International Environmental Law*, 405.

¹⁸¹ A summary of proceedings in the dispute can be found at www.wto.org/english/tratop_e/dispu_e/cases_e/ds381_e.htm

¹⁸² See *European Communities – Measures Prohibiting the Importation and Marketing of Seal Products*, Report of the Appellate Body, WT/DS400/AB/R, WT/DS401/AB/R, 22 May 2014. See also R. Howse, J. Langille and K. Sykes, 'Sealing the Deal: The WTO's Appellate Body Report in *EC – Seal Products*', 18(2) *ASIL Insights* (2014), at www.asil.org/insights/volume/18/issue/12/sealing-deal-wto-s-appellate-body-report-ec---seal-products

the spread of diseases and climate change. Finally, the latest phase of the long-running *Tuna/Dolphin* dispute over eco-labelling has highlighted an increasing role for the TBT Agreement in the surveillance of environmental trade measures.

Despite indications of greater environmental awareness in the jurisprudence of the WTO, it is clear that in GATT disputes the *chapeau* to Article XX places significant constraints on the capacity of WTO members to adopt unilateral trade measures for environmental purposes. The requirement for prior multilateral engagement on an environmental issue with transboundary dimensions, efforts to transfer necessary technologies and the adoption of administrative processes that are transparent, flexible and take account of conditions prevailing in exporting countries are consistent with broader principles of international environmental law. At the same time, however, they limit the capacity of states to respond swiftly and proactively to urgent environmental problems through the adoption of trade measures. These tensions are likely to play out in future disputes over measures adopted for the purpose of climate change protection,¹⁸³ particularly if the US withdraws from the Paris Agreement and repeals domestic emissions reduction measures. Measures associated with climate change – including laws subsidising ‘clean energy’ such as renewable energy technologies and biofuels – also look set to become the site of a ‘new generation’ of trade and environment disputes at the WTO.¹⁸⁴ As later sections discuss, such cases often involve claims under other WTO Agreements, such as those directed to subsidies and anti-dumping requirements.

Measures for Health and Safety Protection

An increasingly important aspect of the relationship between trade and the environment in international law is that relating to the requirements for states to adopt trade measures in furtherance of national goals of human, animal or plant health and safety protection. Health and safety measures with the potential to impact trade are dealt with by the WTO’s Agreement on Sanitary and Phytosanitary Measures (SPS Agreement).¹⁸⁵ The SPS Agreement lays down the conditions governing sanitary and phytosanitary (SPS) measures enacted by members,

¹⁸³ For discussion of the WTO compatibility of so-called border carbon adjustment measures adopted or proposed by states implementing domestic emissions trading or other carbon pricing controls, see further B. Lockwood and J. Whalley, ‘Carbon-Motivated Border Tax Adjustments: Old Wine in Green Bottles?’, 33(6) *World Economy* 810 (2010); K. Holzer, ‘Proposals on Carbon-Related Border Adjustments: Prospects for WTO Compliance’, 4(1) *Carbon and Climate Law Review* 51 (2010); R. Eckersley, ‘The Politics of Carbon Leakage and the Fairness of Border Measures’, 24(4) *Ethics and International Affairs* 367 (2010). While conclusion of the 2015 Paris Agreement, with its universal requirements for developed and developing countries, potentially lessened the need for such policies, President Trump’s withdrawal from the Paris Agreement may see a resurgence of interest by other states in using border carbon adjustment measures against US products.

¹⁸⁴ Wu and Salzman, ‘The Next Generation of Trade and Environmental Conflicts’. For a pertinent example, see the EU Directive on biofuels: EU Directive 2003/30/EC on the promotion of the use of biofuels and other renewable fuels for transport, 8 May 2003. See also the discussion in J. Scott, ‘The Multi-Level Governance of Climate Change’, in P. Craig and G. de Búrca, *Multilevel Governance in the EU* (Oxford: Oxford University Press, 2011), which examines the introduction of sustainability criteria for biofuels under the renewable energy Directive.

¹⁸⁵ Agreement on Sanitary and Phytosanitary Measures, Annex 1A, 33 ILM 28 (1994). See also L. Gruszczynski, *Regulating Health and Environmental Risks under WTO Law: A Critical Analysis of the SPS Agreement* (Oxford: Oxford University Press, 2010); J. Scott, *The WTO Agreement on Sanitary and Phytosanitary Measures: A Commentary* (Oxford: Oxford University Press, 2007).

amplifying Article XX(b) and confirming that measures consistent with the SPS Agreement are deemed to meet the requirements of that Article.¹⁸⁶

The SPS Agreement affirms the right of each WTO member to take SPS measures necessary for the protection of human, animal and plant life or health, subject to the provisions of the Agreement, in particular their trade-restrictiveness and the need for scientific justification.¹⁸⁷ Members must observe national treatment and non-discrimination principles in the design of their measures, must accept the SPS measures of other members as equivalent if the exporting member objectively demonstrates equivalency, and must not apply SPS measures in a manner that would constitute a disguised restriction on international trade.¹⁸⁸ Members must also ensure that their SPS measures are applied only to the extent necessary, are based on scientific principles and are not maintained without sufficient scientific evidence.¹⁸⁹ To promote the harmonisation of SPS measures, members are encouraged to base their SPS measures on international standards where they exist.¹⁹⁰ SPS measures that 'conform to' international standards are deemed necessary to protect human, animal and plant life or health and are presumed to be consistent with the SPS Agreement.¹⁹¹ Members are not prevented from introducing or maintaining SPS measures which are stricter than those reflected in international standards 'if there is a scientific justification, or as a consequence of the level of sanitary or phytosanitary protection a Member determines to be appropriate in accordance with the relevant provisions of paragraphs 1 through 8 of Article 5'.¹⁹²

Article 5 provides that members are to ensure their SPS measures are based on a risk assessment that takes into account, inter alia, available scientific evidence and relevant processes and production methods, and relevant ecological and environmental conditions.¹⁹³ In assessing risk and determining the measure to achieve its appropriate level of SPS protection, a member must take into account as relevant economic factors the potential damage in terms of loss of production or sales in the event of entry, the establishment or spread of the pest or disease, the costs of control or eradication and the relative cost-effectiveness of alternatives to limiting

¹⁸⁶ Art. 2.4. SPS measures are defined in Annex A to the SPS Agreement as:

Any measure applied:

- (a) to protect animal or plant life or health within the territory of the Member from risks arising from the entry, establishment or spread of pests, diseases, disease-carrying organisms or disease-causing organisms;
- (b) to protect human or animal life or health within the territory of the Member from risks arising from additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs;
- (c) to protect human life or health within the territory of the Member from risks arising from diseases carried by animals, plants or products thereof, or from the entry, establishment or spread of pests; or
- (d) to prevent or limit other damage within the territory of the Member from the entry, establishment or spread of pests.

Sanitary or phytosanitary measures include all relevant laws, decrees, regulations, requirements and procedures including, inter alia, end product criteria; processes and production methods; testing, inspection, certification and approval procedures; quarantine treatments including relevant requirements associated with the transport of animals or plants, or with the materials necessary for their survival during transport; provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packaging and labelling requirements directly related to food safety.

¹⁸⁷ Art. 2.1. ¹⁸⁸ Arts. 2.3 and 2.4. ¹⁸⁹ Art. 2.2. ¹⁹⁰ Art. 3.1. ¹⁹¹ Art. 3.2.

¹⁹² Art. 3.3. A footnote to the Article explains that '[f]or the purposes of paragraph 3 of Article 3, there is a scientific justification if, on the basis of an examination and evaluation of available scientific information in conformity with the relevant provisions of this Agreement, a Member determines that the relevant international standards, guidelines or recommendations are not sufficient to achieve its appropriate level of sanitary or phytosanitary protection'.

¹⁹³ Arts. 5.1 and 5.2.

risks.¹⁹⁴ Members must avoid arbitrary or unjustifiable distinctions in the levels of protection considered appropriate in different situations if the distinctions result in discrimination or a disguised restriction on international trade.¹⁹⁵ They must also ensure that measures are not more trade-restrictive than is required to achieve the appropriate level of SPS protection, taking into account technical and economic feasibility.¹⁹⁶ Where relevant scientific evidence is insufficient to allow a full risk assessment, Article 5.7 allows the adoption of provisional SPS measures by a member 'on the basis of available pertinent information' and subject to undertaking a subsequent risk assessment within a 'reasonable' period of time.¹⁹⁷

Disputes between members over SPS measures are dealt with under the dispute settlement procedures of the WTO. To date, there have been six major disputes before WTO Panels and the Appellate Body which raised issues under the SPS Agreement: the *Beef Hormones*, *Australia Salmon*, *Japan Varietals*, *Japan Apples*, *Continued Suspension of Obligations* and *Australia Apples* cases.¹⁹⁸ One dispute concerning the EU's de facto moratorium on the approval of new genetically modified crops, as well as various EU and other schemes designed to require the labelling of products which contain, or may contain, GMOs, was determined by a WTO Panel in 2006 but not appealed to the Appellate Body. The SPS Agreement has fairly rapidly developed a detailed jurisprudence and associated literature around the various complex issues raised by its provisions.¹⁹⁹ It is beyond the scope of this book to elaborate all aspects of SPS law. Rather the following sections highlight the major contributions of key SPS case law to issues of relevance to the intersection of trade and health and environmental concerns.

Beef Hormones Disputes (1998 and 2008)

The *Beef Hormones* case presented the WTO Appellate Body with a first opportunity to consider the application of the provisions of the SPS Agreement.²⁰⁰ The dispute concerned an EU

¹⁹⁴ Art. 5.3.

¹⁹⁵ Art. 5.5. To assist in determining the consistency of SPS measures to address different risks, the Committee on Sanitary and Phytosanitary Measures established by the SPS Agreement has developed guidelines for the practical implementation of Art. 5.5 that bear in mind 'the exceptional character of human health risks to which people voluntarily expose themselves' (Guidelines to Further the Practical Implementation of Article 5.5, G/SPS/15, 18 July 2000).

¹⁹⁶ Art. 5.6.

¹⁹⁷ See J. Bohanes, 'Risk Regulation in WTO Law: A Procedure-Based Approach to the Precautionary Principle', 40 *Columbia Journal of Transnational Law* 323 (2002).

¹⁹⁸ For a listing of all WTO disputes raising issues under the SPS Agreement, see www.wto.org/english/tratop_e/dispu_e/dispu_agreements_index_e.htm?id=A19. All disputes, other than the beef hormones and biotech disputes, involved quarantine measures designed to ensure agricultural plant health.

¹⁹⁹ For a selection, see J. Pauwelyn, 'The WTO Agreement on Sanitary and Phytosanitary (SPS) Measures as Applied in the First Three SPS Disputes EC – Hormones, Australia – Salmon and Japan Varietals', 2(4) *Journal of International Economic Law* 641 (1999); D. Victor, 'The Sanitary and Phytosanitary Agreement of the World Trade Organization: An Assessment After Five Years', 32 *New York University J. International Law and Politics* 865 (2000); T. Christoforou, 'Settlement of Science-Based Trade Disputes in the WTO: A Critical Review of the Developing Case Law in the Face of Scientific Uncertainty', 8 *New York University Environmental Law Journal* 622 (2000); R. Howse, 'Democracy, Science, and Free Trade: Risk Regulation on Trial at the World Trade Organization', 98 *Michigan Law Review* 2329 (2000); Scott, *WTO Agreement on Sanitary and Phytosanitary Measures*; Gruszczynski, *Regulating Health and Environmental Risks under WTO Law*; J. Peel, *Science and Risk Regulation in International Law* (Cambridge: Cambridge University Press, 2010), particularly ch. 5; A. Arcuri, L. Gruszczynski and A. Herwig, 'Independence of Experts and Standards for Evaluation of Scientific Evidence under the SPS Agreement: New Directions in the SPS Case Law', 1(2) *European Journal of Risk Regulation* 183 (2010).

²⁰⁰ J. McDonald, 'Big Beef Up or Consumer Health Threat?: The WTO Food Safety Agreement, Bovine Growth Hormone and the Precautionary Principle', 15 *Environmental and Planning Law Journal* 115 (1998); D. A. Wirth, 'European

prohibition on imports of meat or meat products derived from cattle to which either natural hormones or certain synthetic hormones had been administered for growth-promotion purposes.²⁰¹ Canada and the United States challenged the EU measures primarily on the ground of the alleged failure of the EU to undertake a risk assessment, prior to adoption of the measures, as required by the SPS Agreement. The Panel upheld the challenges, holding that the EU measure was inconsistent with Article 5.1, and that the import prohibition was inconsistent with Articles 3.3 and 5.5 of the SPS Agreement.²⁰² Beyond its conclusion on the relevance of the precautionary principle,²⁰³ the Appellate Body overturned the Panel's ruling that the SPS Agreement allocated the 'evidentiary burden' to the member imposing an SPS measure.²⁰⁴ It found that the complaining parties bore the initial burden of showing prima facie inconsistency of the challenged measures with the SPS Agreement; only after such a prima facie case was made did the burden shift to the other party to provide evidence and arguments to disprove the complaining party's claim.²⁰⁵ The standard of review was neither *de novo* review nor 'total deference' to national authorities, but rather the 'objective assessment of the matter' required by Article 11 of the DSU.²⁰⁶

As to Article 3.1 and 3.3 of the SPS Agreement, the Appellate Body overturned the Panel, ruling that Article 3.1 did not require members to harmonise their SPS measures, by conforming those measures to international standards. Instead, a measure which was 'based on' international standards (such as Codex Alimentarius standards) may adopt some but not necessarily all of the elements of the international standard.²⁰⁷ Measures based on (rather than conforming to) international standards enjoyed no presumption of WTO consistency, but the burden was on the complainant to demonstrate prima facie inconsistency with the SPS Agreement.²⁰⁸ The Appellate Body noted that Article 3.3 gave members an 'autonomous right' (which was neither unqualified nor absolute) to establish their own levels of SPS protection, which may be stricter than international standards.²⁰⁹ In this regard, it agreed with the Panel that a higher standard pursuant to Article 3.3 required a risk assessment (pursuant to Article 5.1).²¹⁰

As to Article 5.1, the Appellate Body considered that the function of the Panel was simply to determine whether the measures were sufficiently supported or reasonably warranted by the risk assessment.²¹¹ It was not necessary that the risk assessment come to a monolithic conclusion that coincided with the scientific conclusion or view implicit in the SPS measure.²¹² The SPS measure might be based on a qualified but divergent minority scientific view:

Communities Restrictions on Imports of Beef Treated with Hormones', 92 *American Journal of International Law* 755 (1998); A. Arcuri, 'Food Safety at the WTO After "Continued Suspension": A Paradigm Shift?', in A. Antoniadis, R. Schütze and E. Spaventa (eds.), *The European Union and Global Emergencies: A Law and Policy Analysis* (Portland, OR/Oxford: Hart, 2011).

²⁰¹ *EC – Measures Concerning Meat and Meat Products (Hormones)*, Report of the Appellate Body, WT/DS26/AB/R and WT/DS48/AB/R, 16 January 1998.

²⁰² *EC – Measures Concerning Meat and Meat Products (Hormones)*, Reports of the US and Canadian Panels, WT/DS26/R/USA and WT/DS48/R/CAN, 18 August 1997.

²⁰³ Chapter 6, p. 233.

²⁰⁴ *EC – Measures Concerning Meat and Meat Products (Hormones)*, Report of the Appellate Body, para. 102.

²⁰⁵ *Ibid.*, para. 109. ²⁰⁶ *Ibid.*, para. 116. ²⁰⁷ *Ibid.*, para. 163. ²⁰⁸ *Ibid.*, paras. 170 and 171.

²⁰⁹ *Ibid.*, paras. 172 and 173. ²¹⁰ *Ibid.*, paras. 175ff. ²¹¹ *Ibid.*, para. 186. ²¹² *Ibid.*, para. 194.

The risk assessment could set out both the prevailing view representing the 'mainstream' of scientific opinion, as well as the opinions of scientists taking a divergent view. Article 5.1 does not require that the risk assessment must necessarily embody only the view of a majority of the relevant scientific community. In some cases, the very existence of divergent views presented by qualified scientists who have investigated the particular issue at hand may indicate a state of scientific uncertainty. Sometimes the divergence may indicate a roughly equal balance of scientific opinion, which may itself be a form of scientific uncertainty. In most cases, responsible and representative governments tend to base their legislative and administrative measures on 'mainstream' scientific opinion. In other cases, equally responsible and representative governments may act in good faith on the basis of what, at a given time, may be a divergent opinion coming from qualified and respected sources. By itself, this does not necessarily signal the absence of a reasonable relationship between the SPS measure and the risk assessment, especially where the risk involved is life-threatening in character and is perceived to constitute a clear and imminent threat to public health and safety.²¹³

The Appellate Body also addressed the preparation and content of the risk assessment.²¹⁴ It concluded that the EU's measures were not based on a risk assessment that reasonably supported or warranted the import prohibition because the various scientific studies the EU had adduced were too general in nature.²¹⁵ Accordingly, the measures were inconsistent with Article 5.1 and consequently also with Article 3.3.²¹⁶

Following the Appellate Body's ruling in *Beef Hormones*, the EU refused to remove its impugned measures, leading the US and Canada to seek approval for trade sanctions against certain European products. In 2003, after seeking seventeen scientific opinions over the period 1999–2002, the EU introduced revised measures that, albeit somewhat less stringent, still had the effect of excluding the complainants' beef products from the EU market.²¹⁷ In November 2004, the EU requested the WTO Dispute Settlement Body to order the removal of trade sanctions on the basis that the new measure complied with the SPS Agreement as the scientific opinions sought by the EU comprised an adequate risk assessment for SPS purposes.²¹⁸ The appeal of the Panel's findings to the Appellate Body in the *Continued Suspension of Obligations* case resulted in some important clarifications of the original *Beef Hormones* rulings. Nonetheless, the core question at the heart of the dispute – whether the EU measures were based upon an SPS-compliant risk assessment – remained unresolved as significant deficiencies in the Panel's assessment of the scientific evidence left the Appellate Body unable to 'complete the analysis' on the substantive legal issues.²¹⁹

²¹³ *Ibid.* ²¹⁴ *Ibid.*, paras. 187–90. ²¹⁵ *Ibid.*, paras. 195–201. ²¹⁶ *Ibid.*, paras. 208–9.

²¹⁷ Directive 2003/74/EC of the European Parliament and of the Council of 22 September 2003 amending Council Directive 96/22/EC concerning the prohibition on the use in stockfarming of certain substances having a hormonal or thyrostatic action and of beta-agonists, OJ L262, 14 October 2003. Under the new Directive, only one hormone (oestradiol-17B) was banned outright. For the other five hormones (testosterone, progesterone, trenbolone acetate, zeranol and MGA), provisional bans were introduced which the EU sought to justify under Art. 5.7.

²¹⁸ *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, Request for Consultations by the European Communities, WT/DS320/1, G/L/713, 10 November 2004; *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, Request for the Establishment of a Panel by the European Communities, WT/DS320/6, 14 January 2005.

²¹⁹ *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, Report of the WTO Appellate Body, WT/DS320/AB/R, 16 October 2008 (the report issued in DS321 brought by Canada is identical to the US report),

The principal contributions to the SPS jurisprudence made by the Appellate Body's findings in *Continued Suspension of Obligations* concerned elaboration of the notion of the types of SPS risk amenable to risk assessment and the degree of 'specificity' required of scientific studies put forward to support a finding of risk; the standard of review to be applied by panels scrutinising members' risk assessments; and the test for 'insufficient' scientific evidence that is the basis for adopting provisional measures in accordance with Article 5.7.

In relation to the notion of risk relevant for the purposes of SPS risk assessment, the Appellate Body in *Beef Hormones* had indicated that 'theoretical uncertainty [i.e. the uncertainty that is inherent in the scientific method which can never provide absolute certainty that a given substance will not ever have adverse health effects] is not the kind of risk which, under Article 5.1, is to be assessed'.²²⁰ Accordingly, the Appellate Body ruled that, in order to be of regulatory concern, an SPS risk must be 'an ascertainable risk' because, 'if a risk is not ascertainable, how does a Member ever know or demonstrate that it exists?'²²¹ In *Continued Suspension of Obligations*, the Appellate Body provided some clarification as to what it saw as the difference between 'theoretical uncertainty' and 'ascertainable risk', remarking that:

it is ... difficult to understand the concept of risk as being devoid of any indication of potentiality. A risk assessment is intended to identify adverse effects and evaluate the possibility that such adverse effects might arise. This distinguishes an ascertainable risk from theoretical uncertainty.²²²

The Appellate Body agreed with a Canadian submission that 'to examine the "potential" for adverse effects is to ask whether those adverse effects could ever occur'.²²³ Moreover, the Appellate Body made clear that if 'there is no ascertainable risk ... no SPS measure can be taken'.²²⁴

On the question of the need for 'specific' studies to support conclusions of risk in a risk assessment, the Appellate Body recognised that, in the case of substances potentially toxic to human health, it would be unethical to insist on a 'specific' evaluation of risks through testing the effects of actual human consumption of the substances.²²⁵ In addition, the Appellate Body found that there was no need for the EU to establish 'a direct causal relationship' between consumption of meat from cattle treated with growth hormones and the possibility of adverse health effects, as 'it was sufficient for the European Communities to demonstrate that the additional human exposure to residues of oestradiol-17 β in meat from treated cattle is one of the factors contributing to the possible adverse health effects'.²²⁶ This latter ruling of the Appellate Body should help to ease the stringency of the specificity requirement in situations of cumulative risk, as, for example, where hormone residues in consumed beef add to levels of hormones and other substances already present in the body to give rise to health effects.

para. 736 (*Continued Suspension of Obligations*). Consequently, the Appellate Body recommended that the parties be requested to initiate compliance proceedings under Art. 21.5 of the DSU without delay: para. 737. However, in the meantime, the United States and the EU reached a provisional deal: the ban on US hormone-treated beef remains in place but duty-free access for non-hormone-treated US beef has been increased. In return, the United States will reduce punitive trade sanctions on EU exports such as Roquefort cheese and Italian mineral water. Further WTO litigation between the parties on the matter was suspended.

²²⁰ *Beef Hormones*, para. 186. ²²¹ *Ibid.* ²²² *Continued Suspension of Obligations*, para. 569.

²²³ *Ibid.*, para. 572. ²²⁴ *Ibid.*, para. 531. ²²⁵ *Ibid.*, para. 563. ²²⁶ *Ibid.*

Accordingly, '[w]here multiple factors may contribute to a particular risk, a risk assessor is not required to differentiate the individual contribution made by each factor'.²²⁷ The Appellate Body pointed to the requirement in Article 5.1 that SPS measures be based on a risk assessment 'as appropriate to the circumstances' as indicating the need for the underlying scientific inquiry to 'take due account of particular methodological difficulties posed by the nature and characteristics of the particular substance and risk being evaluated'.²²⁸

In the longer term, perhaps the most significant rulings of the Appellate Body in *Continued Suspension of Obligations* are those regarding the standard of review to be applied by panels when evaluating a member's measure and its relationship to a risk assessment and scientific evidence. In previous case law, the Appellate Body confirmed that the standard of review applicable under the SPS Agreement is 'neither *de novo* review, as such, nor "total deference", but rather the "objective assessment of the facts"'.²²⁹ In *Continued Suspension of Obligations*, the Appellate Body took the opportunity to clarify the applicable standard of review, as well as related standards pertaining to the treatment of expert evidence about risk.

According to the Appellate Body, the Panel was under an obligation to afford the parties to the dispute 'due process' to ensure that the proceedings were conducted with fairness and impartiality and that one party was not unfairly disadvantaged with respect to the other parties in the dispute.²³⁰ Given that '[s]cientific experts and the manner in which their opinions are solicited and evaluated can have a significant bearing on a panel's consideration of the evidence and its review of a domestic measure, especially in cases . . . involving highly complex scientific issues', the Appellate Body recognised that appointment and consultation of experts who are not independent or impartial can compromise a Panel's ability to act as an independent adjudicator in an SPS case.²³¹ In light of the close association of two of the experts consulted with the preparation of Codex Alimentarius risk assessments related to hormone use, the Appellate Body ruled that it was improper for the Panel to have asked those experts to evaluate the EU's risk assessment, and incompatible with applicable due process obligations.²³² Consequently, the Appellate Body found that it was difficult to sustain the Panel's findings on scientific and risk assessment issues in the case, which relied heavily upon the responses of the two experts in question.²³³

The EU's concerns with respect to the expert evidence related not just to the Panel's decision to consult scientists of questionable independence and impartiality, but also to the way in which the Panel relied upon the expert evidence in reaching its findings. Criticising the Panel for having 'reviewed the scientific experts' opinions and somewhat peremptorily decid[ing] what it considered to be the best science',²³⁴ the Appellate Body went on to articulate what it saw as the appropriate standard and approach to the review of consistency of a member's SPS measure with Article 5.1 of the SPS Agreement. It ruled that the review power of a panel pursuant to Article 11 of the DSU 'is not to determine whether the risk assessment undertaken by a WTO Member is correct, but rather to determine whether that risk assessment is supported by coherent reasoning and respectable scientific evidence and is, in this sense, objectively justifiable'.²³⁵ The Appellate

²²⁷ *Ibid.* ²²⁸ *Ibid.* ²²⁹ *Beef Hormones*, para. 117. ²³⁰ *Ibid.*, para. 433.

²³¹ *Ibid.*, para. 436. The Appellate Body stressed that the obligation to afford due process was not circumscribed to the expert selection stage and does not end with the appointment of experts but continues to apply throughout the Panel's questioning and consultations with experts (para. 473).

²³² *Ibid.*, para. 469. ²³³ *Ibid.*, para. 484. ²³⁴ *Ibid.*, para. 612. ²³⁵ *Ibid.*, para. 590.

Body then went on to spell out, in some detail, the correct methodology for a Panel to follow where it is reviewing a member's risk assessment, particularly one that encompasses divergent or minority scientific perspectives on the risks in question. This methodology involved an identification of the scientific basis of the measure, verifying that the scientific basis of the measure comes from a respected and qualified source and has 'the necessary scientific and methodological rigour to be considered reputable science', evaluating whether the reasoning articulated on the basis of the scientific evidence is objective and coherent, and determining whether the requisite objective relationship exists between the identified scientific basis and the SPS measure adopted by the member.²³⁶ The experts advising the Panel may, and indeed are expected, to play a major role in the Panel's review of an SPS measure. However, the role of the experts is commensurate with the limited mandate of the Panel. Consultations with the experts thus 'should not seek to test whether the experts would have done a risk assessment in the same way and would have reached the same conclusions as the risk assessor'.²³⁷

Questions surrounding the scientific basis of measures were also important to the Appellate Body's rulings on the meaning of the term 'insufficient scientific evidence' used in Article 5.7. Unlike its earlier Directive at issue in the *Beef Hormones* case, the EU's revised hormones Directive sought to rely directly on Article 5.7 in order to sustain a provisional ban on meat treated with any of five specified hormones. The Panel found that this provisional ban failed to meet the requirements of Article 5.7 on the basis that the EU had not shown that the relevant scientific evidence regarding the health effects of residues of these hormones in meat was insufficient. In order to render the existing scientific evidence 'insufficient', the Panel ruled that:

there must be a *critical mass* of new evidence and/or information that calls into question the fundamental precepts of previous knowledge and evidence so as to make relevant, previously sufficient, evidence now insufficient. In the present case where risk assessments have been performed and a large body of quality evidence has been accumulated, this would be possible only if it put into question existing relevant evidence *to the point that* this evidence is no longer sufficient to support the conclusions of existing risks assessments.²³⁸

The Appellate Body's findings on Article 5.7 reversed the Panel's approach as setting too inflexible and too high a threshold for determination of the issue of insufficiency.²³⁹ Instead, the Appellate Body used the concept of 'a spectrum' to illuminate the question of the sufficiency or insufficiency of scientific knowledge for SPS risk assessment in the context of a constantly evolving body of scientific knowledge. At one extreme of this spectrum 'lies the incremental advance of science'; '[w]here these scientific advances are at the margins, they would not support the conclusion that previously sufficient evidence has become insufficient'.²⁴⁰ Given that members are permitted to rely on divergent or minority views from qualified and respected sources in risk assessment, the Appellate Body indicated that mere scientific controversy, or the possibility of conducting further research or of analysing additional information, by themselves,

²³⁶ *Ibid.*, para. 591. ²³⁷ *Ibid.*, para. 592.

²³⁸ *US – Continued Suspension of Obligations*, Panel Report, para. 7.648; *Canada – Continued Suspension of Obligations*, Panel Report, para. 7.626.

²³⁹ See *Continued Suspension of Obligations*, paras. 705–7, 712, 725 and 731. ²⁴⁰ *Ibid.*

do not render relevant scientific evidence 'insufficient' for the purposes of Article 5.7.²⁴¹ At the other extreme of the spectrum 'lie the more radical [and infrequent] scientific changes that lead to a paradigm shift'.²⁴² The application of Article 5.7 is not limited to such situations as, for instance, where new scientific evidence emerges that entirely displaces the scientific theories upon which previous research relies.²⁴³ Rather, 'WTO Members should be permitted to take a provisional measure where new evidence from a qualified and respected source puts into question the relationship between the pre-existing body of scientific evidence and the conclusions regarding risks', in other words, 'where new scientific evidence casts doubt as to whether the previously existing body of scientific evidence still permits of a sufficiently objective assessment of risk'.²⁴⁴ In practice, discerning the difference between 'some evidence' of risk and 'enough' to complete a full and sufficiently objective risk assessment is likely to prove a complex and fraught task.

EC – Biotech (2006)

Analysis of the contribution of the SPS jurisprudence to the intersection of trade and environment would not be complete without discussion of the 2006 decision of a WTO Panel in the *EC – Biotech* case.²⁴⁵ The decision of the parties (the United States, Canada and Argentina as complainants; the EU as the defendant) not to appeal the Panel's legal interpretations of the SPS Agreement leaves the Panel report in a precedential grey zone. In this respect, it is noteworthy that the *EC – Biotech* Panel report was only referred to with approval on a few occasions by the Panel in *Continued Suspension of Obligations* and not at all by the Appellate Body in its appeal decision. In part, this might reflect the very particular course taken by the legal arguments in the *EC – Biotech* case, which only incidentally touched on the major scientific evidence and risk assessment requirements of the SPS Agreement. While the legal findings of the *EC – Biotech* Panel constitute an important ruling in their own right (and one, moreover, that addressed questions of *environmental* risk under the SPS Agreement for the first time), it remains unclear to what extent the Appellate Body might follow the reasoning of the *EC – Biotech* Panel in any subsequent case. Already, some of the Panel's findings – particularly with respect to the insufficiency of scientific evidence for the purposes of Article 5.7 – seem to stand at odds with Appellate Body rulings in the *Continued Suspension of Obligations* case.

²⁴¹ *Ibid.*, paras. 677 and 702. ²⁴² *Ibid.*, para. 703. ²⁴³ *Ibid.*, para. 725. ²⁴⁴ *Ibid.*, para. 703.

²⁴⁵ *EC – Measures Affecting the Approval and Marketing of Biotech Products*, Reports of the Panel, WTO Docs WT/DS291/R, WT/DS292/R, WT/DS293/R, 29 September 2006 ('*EC – Biotech*'). Since the Panel's decision, a substantial literature has developed, analysing the findings of the Panel Report, as well as their broader implications for the field of biotechnology and GMO agriculture: F. Baetens, 'Safe Until Proven Harmful? Risk Regulation in Situations of Scientific Uncertainty: The GMO Case', 66(2) *Cambridge Law Journal* 276 (2007); I. Cheyne, 'Life after the Biotech Products Dispute', 10 *Environmental Law Review* 52 (2008); C. E. Foster, 'Prior Approval Systems and the Substance-Procedure Dichotomy under the WTO Agreement on Sanitary and Phytosanitary Measures', 42(6) *Journal of World Trade* 1199 (2008); R. Howse and H. Horn, 'European Communities – Measures Affecting the Approval and Marketing of Biotech Products', 8(1) *World Trade Review* 49 (2009); S. Lester, 'International Decision: European Communities – Measures Affecting the Approval and Marketing of Biotech Products', 101 *American Journal of International Law* 453 (2007); D. Prevost, 'Opening Pandora's Box: The Panel's Findings in the EC – Biotech Products Dispute', 34(1) *Legal Issues of Economic Integration* 67 (2007); G. Shaffer, 'A Structural Theory of WTO Dispute Settlement: Why Institutional Choice Lies at the Centre of the GMO Case', 41 *New York University Journal of International Law and Politics* 1 (2008); A. Thomison, 'A New and Controversial Mandate for the SPS Agreement: The WTO Panel's Interim Report in the EC – Biotech Dispute', 32 *Columbia Journal of Environmental Law* 287 (2007); N. Zerbe, 'Risking Regulation, Regulating Risk: Lessons from the Transatlantic Biotech Dispute', 24(5) *Review of Policy Research* 407 (2007).

The *EC – Biotech* case concerned the long-running trans-Atlantic dispute over the EU's GMO risk regulatory regime applicable to the authorisation of GMOs for environmental release and for use as or in foods. The dispute centred on allegations made by the three complainants – the United States, Canada and Argentina – that the EU had maintained a de facto moratorium on GMO approvals, effectively refusing to implement the decision-making processes specified under its GMO regulatory framework. The complainants also challenged several safeguard measures maintained by member states of the EU that purported to restrict the growing or sale of particular GMOs or GMO foods in the territories of the member states concerned.²⁴⁶ Arguments of WTO-inconsistency were primarily, though not exclusively,²⁴⁷ focused on the SPS Agreement.

The Panel upheld the complainants' allegations of a general de facto moratorium affecting GMO products and causing delays in the processing of specific product applications,²⁴⁸ but declined to make any finding as to the consistency of the moratorium, or its product-specific manifestations, with the provisions of Articles 2.2 and 5.1 of the SPS Agreement. The Panel achieved this result by distinguishing between the EU's overall pre-marketing approval scheme – which it found was an SPS measure – and the implementation of that scheme – which it held to be simply a 'procedural' decision 'relating to the application, or operation, of the existing EU approval procedures'.²⁴⁹ Based on this reasoning, member states' safeguard measures were assessable under Articles 2.2 and 5.1 (as would have been the entire EU GMO scheme had it been challenged by the complainants).²⁵⁰ The Panel found that the safeguard measures did not meet the requirements of Article 5.1 as the inconclusive studies on which they were based did not satisfy rigorous standards for SPS risk assessment.²⁵¹ An important aspect of the Panel's findings in this regard was that European-level committees had been prepared to issue and later reaffirm favourable risk assessments of the products subject to member state safeguard measures, which indicated in the Panel's view that the available scientific evidence was sufficient for risk assessment purposes.²⁵²

On the other hand, the moratorium, as something less than an SPS measure, was not evaluated against the scientific evidence and risk assessment requirements of the Agreement. Rather the Panel focused its attention on the previously unexplored requirements of Annex C(1)(a) of the SPS Agreement that require members to ensure 'with respect to any procedure to check and ensure the fulfilment of sanitary or phytosanitary measures that ... such procedures are undertaken and completed without undue delay'. The Panel found that the EU moratorium maintained between June 1999 and August 2003 had resulted in undue delay generally in the approval process and also in twenty-four of the twenty-seven product cases cited by the complainants.²⁵³

For future SPS case law involving issues of human health and environmental risk, two other elements of the Panel's rulings in *EC – Biotech* are particularly worth noting. The first is the broad approach that the Panel took in interpreting the definition of an SPS measure under Annex A of the SPS Agreement. The Panel sought the 'ordinary meaning' of terms used in

²⁴⁶ Safeguard measures may be adopted by individual EU member states, on a provisional basis, to restrict or prohibit the use and/or sale of a GMO that has received approval under the EU regulations as or in a product on the member's territory.

²⁴⁷ Canada and Argentina also presented claims under the GATT and the TBT Agreement; however, in light of its findings under the SPS Agreement, the Panel did not proceed to consider the validity of these claims.

²⁴⁸ *EC – Biotech*, para. 7.1272. ²⁴⁹ *Ibid.*, para. 7.1378. ²⁵⁰ *Ibid.*, para. 8.4. ²⁵¹ *Ibid.*, paras. 8.21–8.32.

²⁵² *Ibid.*, para. 8.9. ²⁵³ *Ibid.*, para. 8.6.

Annex A, while also finding that the 'indirect' and long-term health and environmental effects of pests, diseases and food additives could be encompassed within the scope of risks addressed by the SPS Agreement.²⁵⁴ Notably, the Panel saw no bar to the SPS Agreement dealing with environmental risk measures,²⁵⁵ or to broad environmental concerns such as the effects of GMOs on biodiversity.²⁵⁶

The second ruling of the Panel, of potentially broader significance, related to its findings on the role of other international law in interpretation and application of provisions of the SPS Agreement. As in *Beef Hormones*, the EU argued that the precautionary principle was a general principle of international law of relevance in the interpretation of the SPS Agreement. The Panel essentially followed the reasoning of the Appellate Body in *Beef Hormones* on this issue, declining to make a finding on the status of the precautionary principle in international law, although it agreed with the EU that Annex C(1)(a) did not 'preclude the application of a prudent and precautionary approach to identifying, assessing and managing risks to human health and the environment arising from GMOs and GMO-derived products'.²⁵⁷ Ultimately, however, the Panel found that precaution must always be 'subject to reasonable limits, lest the precautionary approach swallow the discipline imposed by Annex C(1)(a), first clause' and thus did not provide a justification for delay in the circumstances. The Panel also took a narrow approach to the application of the Biosafety Protocol in interpretation pursuant to Article 31(3)(c) of the Vienna Convention on the Law of Treaties allowing for consideration of any relevant rules of international law 'applicable in the relations between the parties'.²⁵⁸ The Panel interpreted this phrase to mean that the other treaty, in this case the Biosafety Protocol, must be applicable to *all* WTO members in order to be relevant for the purposes of interpretation.²⁵⁹ Beyond the limited sphere of environmental treaties with universal participation, this finding effectively rules out reference to international environmental conventions as part of the process of applying SPS or other WTO rules.

Assessment

The decisions under the SPS Agreement indicate the extent of the limitations on the ability of WTO members to adopt SPS measures with potential trade effects. If the rulings of the *EC – Biotech* Panel are followed in subsequent cases, a wider range of measures, including those addressed to environmental risks, may potentially come within the scope of the SPS Agreement. The case law emphasises the need for SPS measures to be based on a scientific assessment of potential risks; 'real world' risks can be taken into account as part of the assessment but there must be a rational relationship between any SPS measure and the scientific evidence. As to Article 5.5, the Appellate Body has affirmed that members have an autonomous right to determine their appropriate level of SPS protection for different risks.²⁶⁰ The decision in *Beef Hormones* (along with other SPS cases such as *Australian Salmon*) emphasises the need for WTO members to pay greater attention to the issue of consistency between the SPS measures that they maintain for similar risks. With regard to Article 5.7 – in which, the Appellate Body has said – the precautionary principle finds 'reflection',²⁶¹ members must navigate the difficult concept of

²⁵⁴ *Ibid.*, paras. 7.225–7.226. ²⁵⁵ *Ibid.*, para. 7.226.

²⁵⁶ *Ibid.*, para. 3.72. On the implications of these findings for the scope of the SPS Agreement, see J. Peel, 'A GMO by Any Other Name . . . Might Be an SPS Risk!: Implications of Expanding the Scope of the WTO Sanitary and Phytosanitary Measures Agreement', 17(5) *European Journal of International Law* 1009 (2007).

²⁵⁷ *EC – Biotech*, para. 7.1522. ²⁵⁸ Chapter 4, pp. 108–9. ²⁵⁹ *EC – Biotech*, paras. 7.68–7.70.

²⁶⁰ *Beef Hormones*, Appellate Body Report, para. 194. ²⁶¹ *Ibid.*, para. 124.

'insufficient' scientific evidence (which is not treated as equivalent to the precautionary standard of scientific uncertainty), as well as seeking additional information germane to the conduct of a proper risk assessment and review any provisional measures within a reasonable period of time. The precautionary principle does not provide a separate basis for the adoption of SPS measures where the underlying science is uncertain, though a precautionary approach to risk assessment may be warranted in such circumstances. In particular, a member may be justified in basing its measures on qualified divergent scientific opinion 'where the risk involved is life-threatening in character and is perceived to constitute a clear and imminent threat to public health and safety'.²⁶² The Appellate Body's findings on the standard of review in *Continued Suspension of Obligations* also suggest a trend towards granting WTO members greater leeway in their evaluation of risks, although any flexibility afforded does not excuse members from 'properly' performing their risk assessments.

Regional and Bilateral Free Trade Agreements

European Union²⁶³

Similar provisions to those found in the GATT also exist in the Treaty on the Functioning of the European Union (EU Treaty), which from 2009 replaced the former Treaty Establishing the European Community (EC Treaty) adopted in 1957 to create a 'common market' between the six original member states. Article 34 (formerly Article 28) of the EU Treaty prohibits quantitative restrictions on imports and all measures having equivalent effects (non-tariff barriers to trade). The express exceptions to Article 34, set out in Article 36 (formerly Article 30), include the protection of health and life of humans, animals or plants, provided that such prohibitions or restrictions do not constitute a means of arbitrary discrimination or a disguised restriction on trade between member states. Environmental protection is not expressly included as an exception. Following the conclusion of the Treaty of Amsterdam in 1997, the EC Treaty was amended to provide that, where harmonisation measures, including environmental measures, are adopted by the EU under Article 114 (formerly Article 95) to achieve the progressive establishment of the internal market, then, if

a Member State deems it necessary to maintain national provisions on grounds of major needs referred to in Article 36, or relating to the protection of the environment or the working environment, it shall notify the Commission of these provisions as well as the grounds for maintaining them. Moreover . . . if, after the adoption by the Council or by the Commission of a harmonisation measure, a Member State deems it necessary to introduce national provisions based on new scientific evidence relating to the protection of the environment or the working environment on grounds of a problem specific to that Member State arising after the adoption of the harmonisation measure, it shall notify the Commission of the envisaged provisions as well as the grounds for introducing them.²⁶⁴

²⁶² *Ibid.*, para. 172.

²⁶³ A substantial literature exists on trade and environment in the EU context. For useful introductory resources, see J. Scott, *EC Environmental Law* (Portland, OR/Oxford: Hart, 2000), ch. 4; J. Jans and H. B. Vedder, *European Environmental Law* (Groningen, the Netherlands: Europa Law Publishing, 2012), 253–335; L. Krämer, *EU Environmental Law* (London: Sweet & Maxwell, 2015, 8th edn).

²⁶⁴ Art. 114(4) and (5) (formerly Art. 95(4) and (5)).

Where environmental protection measures are adopted under Article 191 (formerly Article 175) of the EU Treaty, member states are not prevented from 'maintaining or introducing more stringent protective measures' that are compatible with the Treaties.²⁶⁵ Even after amendment, the EU Treaty is silent as to the permissibility of national environmental measures which restrict or limit trade where no EU measures have been adopted on a particular environmental matter under Articles 114 or 191.

Trade Restrictions on Environmental Grounds: The Role of the European Court of Justice

The European Court of Justice (ECJ) has played an important role in delimiting the conditions under which environmental protection measures adopted by EU member states will be permitted. In 1983, the ECJ upheld French legislation that restricted the export of waste oils from France to other EU member states.²⁶⁶ Two years later, the ECJ held that the protection of the environment was one of the Community's 'essential objectives' which could, as such, justify certain limitations on the free movement of goods provided that they did not 'go beyond the inevitable restrictions which are justified by the pursuit of the objective of environmental protection'.²⁶⁷ This was followed by two landmark cases that provided significant guidance on the position of the ECJ: the 1989 judgment in the *Danish Bottles* case²⁶⁸ and the 1992 judgment in the *Belgian Waste Disposal* case.²⁶⁹

The *Danish Bottles* case concerned Danish legislation introduced to allow the adoption of rules limiting, prohibiting or requiring the use of certain materials and types of container for drinks. The legislation required, first, that containers for gaseous mineral waters, lemonade, soft drinks and beer be subject to a compulsory deposit-and-return system, and, second, that such containers be approved by the National Agency for the Protection of the Environment (NAPE). Producers of beverages and containers in other member states, and their trade associations, considered the Danish legislation to establish a non-tariff barrier to trade, which restricted the import into Denmark of their products and could be considered to have certain extraterritorial effects. The producers were supported in their view by the European Commission, which called on the Danish government to change its law. This led to an amendment allowing beverages covered by the original legislation to be sold in non-approved containers, provided that the quantity sold did not exceed 3,000 hectolitres per annum per producer, or that the beverage was being sold in the container normally used for that product in the country of production in order to 'test-market' it in Denmark. Additionally, the amendment required that no metal containers be used, that a return/recycling system for non-approved containers be set up, that the deposit for the container be equal to that normally charged on a similar approved container, and that the person marketing the product keep the NAPE fully informed to show compliance.

The European Commission was not satisfied with the amendments, and in 1986 brought proceedings to have the compulsory deposit-and-return system and the NAPE bottle-approval

²⁶⁵ Art. 193 (formerly Art. 176); pursuant to the 1992 Maastricht Treaty amendments, such measures must be notified to the Commission.

²⁶⁶ Case 172/82, *Syndicat National des Fabricants d'Huile de Graissage v. Groupement d'Intérêt Economique 'InterHuiles'* [1983] ECR 555.

²⁶⁷ Case 240/83, *Procureur de la République v. Association de Défenses des Brûleurs d'Huiles Usagées* [1985] ECR 531.

²⁶⁸ Case 302/86, *Commission v. Denmark* [1989] 1 CMLR 619; P. Kromarek, 'Environmental Protection and Free Movement of Goods: The Danish Bottles Case', 2 *Journal of Environmental Law* 89 (1990); P. Sands, 'Danish Bottles and Mexican Tuna', 1 *Review of European Community and International Environmental Law* 28 (1992).

²⁶⁹ Case C-2/90, *Commission v. Belgium* [1993] 1 CMLR 365.

system declared incompatible with Article 34 of the EU Treaty. The ECJ held that the deposit-and-return system was compatible with Article 34, but that the NAPE approval system was not so compatible. The ECJ stated that:

in the absence of common rules relating to the marketing of the products concerned, obstacles to movement within the Community resulting from disparities between national laws must be accepted, in so far as such rules, applicable to domestic and imported products without distinction, may be recognised as being necessary in order to satisfy mandatory requirements of Community law. It is also necessary for such rules to be proportionate to the aim in view. If a member state has a choice between various measures to achieve the same objective, it should choose the means which least restrict the free movement of goods . . . The protection of the environment is a mandatory requirement which may limit the application of Article 30 of the Treaty.²⁷⁰

The ECJ found that the deposit-and-return system established an obligation that was:

an essential element of a system aiming to secure the re-use of containers and therefore appears to be necessary to attain the objectives of the disputed regulations. In view of this finding, the restrictions which they impose on the free movement of goods should not be considered as disproportionate.

However, as regards the NAPE approval system, the ECJ found that, by restricting the quantity of beer and soft drinks that could be marketed by a single producer in non-approved containers to 3,000 hectolitres per year, Denmark had adopted measures with disproportionate consequences:

the existing system of return for approved containers guarantees a maximum percentage of re-use and therefore gives considerable protection to the environment because the empty containers can be returned to any retailer of beverages, whereas non-approved containers can only be returned to the retailer who sold the beverage because of the impossibility of setting up such a complete organisation for such containers also. However, the system for returning non-approved containers is capable of protecting the environment and, so far as imports are concerned, covers only limited quantities of beverages by comparison with the quantity consumed in the country because of the restrictive effect of the compulsory return of containers on imports. Under these conditions, limiting the quantity of products which can be marketed by importers is disproportionate to the objective.²⁷¹

In summary, the Court found that in the absence of specific EU legislation establishing a rule of environmental protection, national environmental rules to restrict trade between member states are permitted provided that:

1. the rules are necessary to protect the environment;
2. the effect on trade is not disproportionate to the objective pursued; and
3. the rules are not discriminatory against producers in third countries.

²⁷⁰ See n. 268, 631. ²⁷¹ *Ibid.*, 632.

The ECJ's approach is not dissimilar to the analysis applied to the Article XX *chapeau* by the Appellate Body in the *Shrimp/Turtle* dispute, although the Appellate Body spoke in terms of the need to maintain a balance between the right of a member to invoke an exception under Article XX and the rights of the other members under GATT's substantive provisions, rather than in terms of proportionality. The ECJ's approach recognises the widespread support for weight to be given to legal aspects of environmental protection, even if this results in disparities in environmental standards and justifiable interference with the sanctity of free trade ideals.

In the *Belgian Waste Disposal* case, the ECJ ruled that Belgian legislation limiting the free movement of waste had been adopted in breach of an EU Directive but did not violate the provision on the free movement of goods. The judgment established further principles to justify restrictions on free trade that are adopted for environmental protection purposes. The case was brought by the European Commission against Belgium on the basis that legislation of the Wallonia region of Belgium which prohibited the disposal in Wallonia of waste originating from another state was incompatible with relevant EU waste Directives, as well as Article 34 (formerly Article 28) and Article 36 (formerly Article 30) of the EU Treaty.

The question concerning the violation of Articles 34 and 36 raised interesting points analogous to issues raised in GATT/WTO disputes. It turned on whether the EU Treaty provisions governing the free movement of goods applied to wastes which could not be recycled or reused. Belgium argued that such wastes were not goods within the meaning of Article 34, since they had no intrinsic commercial value and could not be the subject of a sale. The Court rejected this approach. It held that any objects which were transported across a boundary to give effect to a commercial transaction were subject to Article 34, whatever the nature of the transaction, and that recyclable or non-recyclable wastes were products subject to Article 34 whose free movement under that Article should not, as a matter of principle, be limited.²⁷² The Court held that the distinction between recyclable and non-recyclable wastes created serious practical difficulties of application, particularly in the context of constantly evolving technical progress; whether waste was recyclable or not depended also on the cost of recycling and the usefulness of the reuse envisaged.

Having decided that wastes were covered by Article 34, the Court considered whether the prohibition imposed by the limitation could nevertheless be justified. It accepted that the protection of the environment could justify the Belgian legislation, and rejected the Commission's argument that the legislation should be declared unlawful on the grounds that it was discriminatory because it treated wastes from other member states more restrictively than the same wastes which might have been produced in Wallonia having regard 'to the differences between waste produced in one place and that in another and its connection with the place where it is produced'.²⁷³ The Court considered that waste had a special character and that the application of Article 191(2) (formerly Article 174(2)) of the EU Treaty, which establishes the principle that environmental damage should as a priority be rectified at source, implied that it was a matter for each region, commune or other local authority to take appropriate measures to ensure the receipt, treatment and disposal of its own wastes: waste should be disposed of as close as possible to the place where it is produced in order to keep the transport of waste to the minimum

²⁷² *Ibid.*, 396.

²⁷³ *Ibid.*, 397.

practicable.²⁷⁴ The Court thus endorsed an environmentally based limitation on the free movement of goods under EU law, justifying this on the grounds that it accorded with the principles of 'self-sufficiency' and 'proximity' as provided in the 1989 Basel Convention.²⁷⁵

Since these early cases, the ECJ has decided a number of other cases dealing with both environmental protection measures and measures concerned with the related goal of ensuring public health and safety.²⁷⁶ One such case, which has parallels with similar disputes determined by the WTO dispute settlement system,²⁷⁷ was the *German Renewable Energy* case.²⁷⁸ This case concerned, inter alia, the compatibility with Article 34 of a German law obliging electricity supply undertakings, which operated a general supply network, to purchase the electricity produced in their area of supply from renewable sources of energy. The ECJ noted that, according to the well-known *Dassonville* formula, 'any national measure which is capable of hindering, directly or indirectly, actually or potentially, intra-Community trade' is inconsistent with Article 34.²⁷⁹ It recalled that its case law established that an obligation to obtain a certain percentage of supplies from a national supplier limited the possibility of importing the same product because purchasers are precluded from obtaining supplies, in respect of part of their needs, from suppliers situated in other member states.²⁸⁰ Consequently, the German law was 'capable, at least potentially, of hindering intra-Community trade', since it expressly stated that the purchase obligation imposed on electricity suppliers applied only to electricity produced from renewable energy sources within the respective supply area.²⁸¹

Notwithstanding this finding, the Court ruled that the German measure was not incompatible with Article 34 given its aim and the features of the electricity market.²⁸² In particular, the Court noted that:

use of renewable energy sources for producing electricity, which a statute such as the amended *Stromeinspeisungsgesetz* is intended to promote, is useful for protecting the environment in so far as it contributes to the reduction in emissions of greenhouse gases which are among the main causes of climate change which the European Community and its Member States have pledged to combat.²⁸³

In contrast to the *Danish Bottles* case, the Court did not rely on environmental protection as a 'mandatory requirement' justifying a departure from Article 34. Rather, it pointed to a number of considerations supporting its conclusion that, 'in the current state of Community law concerning the electricity market', legislation such as the German law was not incompatible with Article 34 of the Treaty. These included the obligations assumed by the Community and individual member states under the 1992 Climate Change Convention and the 1997 Kyoto Protocol to

²⁷⁴ *Ibid.* ²⁷⁵ *Ibid.* On the 1989 Basel Convention, see Chapter 12, pp. 620–3.

²⁷⁶ See e.g. Case C-293/94, *Rechtbank van eerste aanleg Turnhout – Belgium* [1996] ECR I-3159; Case C-389/96, *Aher-Waggon GmbH v. Germany* [1998] ECR I-4473; Case C-67/97, *Criminal Proceedings Against Bluhme* [1998] ECR I-8033; Case C-217/99, *Commission of the European Communities v. Kingdom of Belgium* [2000] ECR I-10251; Case C-473/98, *Kemikalieinspektionen v. Toolex Alpha AB* [2000] ECR I-5681; Case C-320/03, *Commission v. Austria* [2005] ECR I-9871.

²⁷⁷ See p. 871.

²⁷⁸ Case C-379/98, *PreussenElektra AG v. Schleswig AG* [2001] ECR I-2099. See also D. Thieme and B. Rudolf, 'PreussenElektra AG v. Schleswig AG. Case C-379/98', 96(1) *American Journal of International Law* 225 (2002).

²⁷⁹ Case 8/74, *Dassonville* [1974] ECR 837, para. 5. ²⁸⁰ *PreussenElektra AG v. Schleswig AG*, para. 70.

²⁸¹ *Ibid.*, para. 71. ²⁸² *Ibid.*, para. 72. ²⁸³ *Ibid.*, para. 73.

promote growth in the use of renewable energy; the requirements of Article 11 (formerly Article 6) of the EU Treaty (environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities with a view to promoting sustainable development); various recitals of the relevant Council Directive concerning common rules for the internal market in electricity, which expressly stated that it was 'for reasons of environmental protection' that the Directive authorised member states to give priority to the production of electricity from renewable sources; and the fact that, once electricity has been allowed into the transmission or distribution system, it is difficult to determine its origin and, in particular, the source of energy from which it was produced necessitating a system of certificates of origin for electricity produced from renewable sources, capable of being the subject of mutual recognition, in order to make intra-Community trade in that type of electricity both reliable and possible in practice.²⁸⁴

North American Free Trade Agreement²⁸⁵

The North American Free Trade Agreement (NAFTA) between Canada, Mexico and the United States²⁸⁶ establishes a free trade area between the parties in accordance with Article XXIV of the GATT, and is intended to establish principles and rules (including national treatment and most-favoured nation treatment, to, inter alia, eliminate barriers to trade in goods and services and promote competition between the parties) in a manner which is consistent with environmental protection and conservation and which will promote sustainable development.²⁸⁷ In the event of inconsistencies between the NAFTA and the GATT, and except as otherwise provided in the NAFTA, the provisions of the NAFTA prevail.²⁸⁸ The NAFTA's provisions on foreign investment protection are addressed in the following section of the chapter.

Environmental considerations were and remain a controversial aspect of the NAFTA, due to strong lobbying by environmental groups and labour unions in the United States who were concerned by the potential effect of weaker Mexican environmental standards on the more stringent US environmental standards, and on the implications for labour. The NAFTA addresses environmental issues, and further measures to strengthen its commitment to environmental protection were set forth in the 1993 Agreement on Environmental Co-operation (see below). NAFTA expressly provides that trade obligations under the 1973 CITES, the 1987 Montreal Protocol (and its 1990 amendments), the 1989 Basel Convention (upon its entry into force for the parties – the United States is yet to ratify the treaty) and the agreements set out in Annex 104.1 to the NAFTA, are to prevail to the extent of inconsistency 'provided that where a party has a choice among equally effective and reasonably available means of complying with such obligations, the party chooses the alternative that is least inconsistent with the other provisions of

²⁸⁴ *Ibid.*, paras. 76–80.

²⁸⁵ G. C. Hufbauer and J. J. Schott, *NAFTA and the Environment: Seven Years Later* (Institute for International Economics, 2000); K. Gallagher, *Free Trade and the Environment: Mexico, NAFTA, and Beyond* (Stanford, CA: Stanford University Press, 2004); E. Zepeda et al., *The Future of North American Trade Policy: Lessons from NAFTA* (2009); J. H. Knox, 'The Neglected Lessons of the NAFTA Environmental Regime', 45 *Wake Forest Law Review* 391 (2010).

²⁸⁶ Washington, 8 and 17 December 1992; Ottawa, 11 and 17 December 1992; Mexico City, 14 and 17 December 1992, in force 1 January 1994, 32 ILM 289 (1993) and 32 ILM 605 (1993).

²⁸⁷ Preamble and Arts. 101 and 102(1)(a) and (b). ²⁸⁸ Art. 103(2).

[NAFTA]'.²⁸⁹ Moreover, for the purposes of Part Two (Trade in Goods) and Part Three (Technical Barriers to Trade) of the NAFTA, Article XX of the GATT is incorporated on the understanding that 'the measures referred to in GATT Article XX(b) include environmental measures necessary to protect human, animal or plant life or health, *and* that GATT Article XX(g) applies to measures relating to the conservation of living and non-living exhaustible natural resources'.²⁹⁰

The NAFTA requires each party to accord national treatment to the goods of the other parties in accordance with Article III of the GATT,²⁹¹ and provides for the elimination of tariffs.²⁹² Except as provided in the NAFTA, non-tariff measures such as prohibitions on imports or exports, which could include national environmental protection measures, are prohibited except in accordance with Article XI of the GATT.²⁹³ Prohibited non-tariff measures include customs user fees, country-of-origin marking, standards and labelling of distinctive products, and export taxes and other export measures.²⁹⁴ The NAFTA contains detailed provisions on sanitary and phytosanitary measures, and other non-technical barriers to trade, drawing a distinction between the rules applicable to each type of measure.

Agricultural, Sanitary and Phytosanitary Measures

The NAFTA establishes a framework of rules and disciplines to guide the development, adoption and enforcement of sanitary and phytosanitary measures that may directly or indirectly affect trade between the parties which is virtually identical to that of the WTO SPS Agreement.²⁹⁵ The NAFTA SPS rules allow each party to adopt, maintain or apply any sanitary or phytosanitary measure which is 'necessary for the protection of human, animal or plant life or health in its territory, including a measure more stringent than an international standard, guideline or recommendation'.²⁹⁶ Under Article 712(2), each party may establish appropriate levels of protection in accordance with protecting human, animal or plant life or health, but must ensure that any sanitary or phytosanitary measure that it adopts, maintains or applies:

- (1) is based on scientific principles (including a risk assessment),²⁹⁷
- (2) does not arbitrarily or unjustifiably discriminate between its goods and like goods of another party or between goods of another party and like goods of any other country where identical or similar conditions prevail,²⁹⁸
- (3) is applied only to the extent necessary to achieve its appropriate level of protection (Article 712 (5)); and
- (4) does not create a disguised restriction on trade.²⁹⁹

²⁸⁹ Art. 104(1). The agreements identified in Annex 104.1 are the 1983 Agreement Between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Areas, La Paz, Baja California Sur, 14 August 1983, and the 1986 Agreement Between Canada and the United States of America Concerning the Transboundary Movement of Hazardous Waste, Ottawa, 28 October 1986.

²⁹⁰ Art. 2101. ²⁹¹ Art. 301; but, on sanitary and phytosanitary measures, see below. ²⁹² Arts. 302–308.

²⁹³ Art. 309; on sanitary and phytosanitary measures, see below. 'Measures' includes 'any law, regulation, procedure, requirement or practice' (Art. 201(1)). Annex 301.3 sets out measures to which this prohibition and that under Art. 301 do not apply, including controls by each of the parties on the export of logs of all species.

²⁹⁴ Arts. 310–315 and Annexes.

²⁹⁵ Art. 709; Arts. 301 and 309 and Art. XX(b) of the GATT, as incorporated into Art. 2101, do not apply to any sanitary or phytosanitary measures.

²⁹⁶ Art. 712(1). ²⁹⁷ Art. 712(3). ²⁹⁸ Art. 712(4). ²⁹⁹ Art. 712(6).

Under NAFTA, international standards, guidelines or recommendations are to be used as the basis for sanitary and phytosanitary conditions.³⁰⁰ The general objective of this section is to create equivalence in standards:

Without reducing the level of protection of human, animal or plant life or health, the parties shall, to the greatest extent practicable and in accordance with this Section, pursue equivalence of their respective sanitary and phytosanitary measures.³⁰¹

Article 715 sets out the factors that are to be taken into account in conducting risk assessments. These include: relevant techniques and methodologies of international standardising organisations; relevant scientific evidence; relevant processes and production methods and inspection and testing methods; the prevalence of relevant diseases or pests; relevant ecological or other environmental conditions; relevant treatments such as quarantine; certain specified economic factors; and the objective of minimising negative trade effects and arbitrary or unjustifiable restrictions on trade which discriminate or constitute a disguised restriction on trade.³⁰² NAFTA provides for adaptation to regional conditions and the procedures for dealing with control, inspection and approval, and for the notification and publication of information on federal measures, and establishes an advisory Committee on Sanitary and Phytosanitary Measures to facilitate the enhancement of food safety and the improvement of sanitary and phytosanitary conditions, activities under Articles 713 and 714, technical cooperation and consultation.³⁰³

Non-Technical Barriers to Trade

Chapter 9 of the NAFTA (Articles 901–915) establishes rules for any standards-related measure of a party other than sanitary and phytosanitary measures, that may directly or indirectly affect trade in goods or services between the parties, and to measures of the parties relating to such standards. This includes environmental measures other than those related to agriculture. Further to Article 103, the parties affirm their existing rights and obligations relating to standards-related measures under the 1979 GATT Agreement on Technical Barriers to Trade and all other international agreements, including environmental and conservation agreements, to which they are party.³⁰⁴

Under Article 904(1), the parties are allowed to adopt, maintain or apply any standards-related measure, which is defined as a standard, technical regulation, or conformity assessment procedure, including those ‘relating to safety, the protection of human, animal and plant life or health, the environment or consumers, and any measure to ensure its enforcement or implementation’. Article 904(1) provides that such measures include those to prohibit the importation of a good of another party that fails to comply with the applicable requirements of those measures. Since the

³⁰⁰ Art. 713(1). Art. 713 also establishes a presumption that measures conforming to international standards are presumed to be consistent with Art. 712, but that measures which differ from such international standards shall not for that reason alone be presumed to be inconsistent with Chapter 7, subparagraph B (Art. 713(2)). The parties are encouraged to participate in relevant international standardising organisations, including the Codex Alimentarius Commission, the International Office of Epizootics, the International Plant Protection Convention, and the North American Plant Protection Convention.

³⁰¹ Art. 714(1). ³⁰² Art. 715(1) and (2). ³⁰³ Arts. 716–724. ³⁰⁴ Art. 903.

definition of standard and technical regulation includes 'processes and production methods' related to goods,³⁰⁵ Article 904 would appear to permit US legislation prohibiting the import of yellow-fin tuna from Mexico on the ground that it was caught in a way which violated US environmental and fisheries standards, in effect superseding the ruling of the GATT Panel in the original *Tuna/Dolphin* case. This would appear to be the correct interpretation, since in pursuing its legitimate environmental objectives each party may establish the level of protection that it considers appropriate, provided that those measures:

avoid arbitrary or unjustifiable distinctions between similar goods or services in the level of protection it considers appropriate, where the distinctions:

- (a) result in arbitrary or unjustifiable discrimination against goods or service providers of another party;
- (b) constitute a disguised restriction on trade between the parties; or
- (c) discriminate between similar goods or services for the same use under the same conditions that pose the same level of risk and provide similar benefits.³⁰⁶

Goods and service providers are entitled to national treatment and treatment no less favourable than that accorded to goods or service providers of any other country.³⁰⁷ Standards-related measures are prohibited if they create an unnecessary obstacle to trade, but no such unnecessary obstacle will be deemed to be created if the demonstrable purpose of such measures is to achieve a legitimate objective and they do not exclude goods of another party that meet that legitimate objective.³⁰⁸ However, the parties must use established international standards (or international standards whose completion is imminent) as a basis for their standards-related measures, except where such standards would be ineffective or inappropriate to fulfil legitimate objectives, including their failure to achieve a 'level of protection that the party considers appropriate'.³⁰⁹ Measures based on international standards will be presumed to be consistent with Article 904(3) and (4).³¹⁰ Moreover, and crucially, Article 905(1) is not to be construed

to prevent a party, in pursuing its legitimate objectives, from adopting, maintaining or applying any standards-related measure that results in a higher level of protection than would be achieved if the measures were based on the relevant international standard.³¹¹

In this context (and recognising the 'crucial role of standards-related measures in promoting and protecting legitimate objectives'), the parties agree to work jointly to enhance the level of the protection of the environment; without reducing such protection, and taking into account international standardisation activities, NAFTA commits the parties 'to the greatest extent practicable, [to] make compatible their respective standards-related measures'.³¹² To that end,

³⁰⁵ Art. 915(1). ³⁰⁶ Arts. 904(2) and 907(2). ³⁰⁷ Art. 904(3). ³⁰⁸ Art. 904(4). ³⁰⁹ Art. 905(1).

³¹⁰ Art. 905(2). ³¹¹ Art. 905(3).

³¹² Art. 906(1) and (2). 'Make compatible' is defined as bringing 'different standards-related measures of the same scope approved by different standardising bodies to a level such that they are either identical, equivalent, or have the effect of permitting goods or services to be used in place of one another or fulfil the same purpose' (Art. 915(1)).

the parties undertake to seek to promote the compatibility of specific standard or conformity assessment procedures.³¹³ Each importing party agrees to treat technical regulations adopted or maintained by an exporting party as equivalent to its own where the exporting party demonstrates to the satisfaction of the importing party that its technical regulation adequately fulfils the importing party's legitimate objectives.³¹⁴ In pursuing their legitimate objectives, a party may conduct a risk assessment on a good or service, which is to include: consideration of available scientific evidence; intended end uses; processes or production and other methods; and environmental conditions.³¹⁵

Chapter 9 of NAFTA also provides for rules establishing the compatibility of conformity assessment, the notification and publication of proposals adopting or modifying technical regulations, inquiry points and technical cooperation.³¹⁶ A Committee on Standards-Related Measures is established to, inter alia: monitor implementation; facilitate the compatibility of measures and enhance the development, application and enforcement of measures; and consider non-governmental regional and multilateral developments regarding standards-related measures, including those under the WTO/GATT.³¹⁷

Competition

The rules on competition are far less detailed than their equivalent in the EU and are unlikely, in the short or medium term, to provide a basis for the further development of international law rules on competition and the environment. The NAFTA requires each party to adopt or maintain measures to proscribe anti-competitive business conduct.³¹⁸ A monopoly must not act in a manner which is inconsistent with a party's obligations under the NAFTA, must act solely in accordance with commercial considerations, and must not use its monopoly position to engage in anti-competitive practices in a non-monopolised market in its territory.³¹⁹ The NAFTA established a Working Group on Trade and Competition, but has no rules on subsidies.³²⁰ National laws on anti-dumping and countervailing duties were retained.³²¹

Institutions and Dispute Settlement

NAFTA's principal organ is the Free Trade Commission, which is responsible for supervising implementation, overseeing its further elaboration, resolving disputes concerning interpretation and application, supervising the work of committees established under the Agreement and considering any other matters which arise.³²² The Commission, which comprises cabinet-level representatives or their designees, is assisted by a secretariat.³²³ The system for the settlement of disputes under the NAFTA provides for a number of options. First, disputes arising under both the NAFTA and the GATT may be settled in either forum at the discretion of the complaining party.³²⁴ However, where the responding party claims that its action is subject to Article 104 (Relation to Environmental and Conservation Agreements) and requests that the matter be dealt with under the NAFTA, only the procedures available under the NAFTA will be available.³²⁵ Similar provisions apply in respect of disputes arising under the provisions on sanitary and phytosanitary measures and standards-related measures concerning, inter alia, measures to protect the environment or factual issues concerning the environment and directly related

³¹³ Art. 906(3).

³¹⁴ Art. 906(4).

³¹⁵ Art. 907(1).

³¹⁶ Arts. 908–912.

³¹⁷ Art. 913.

³¹⁸ Art. 1501.

³¹⁹ Art. 1502(3).

³²⁰ Art. 1504.

³²¹ NAFTA, Chapter 19 and Art. 1902.

³²² Art. 2001(1) and (2).

³²³ Art. 2002.

³²⁴ Art. 2005(1).

³²⁵ Art. 2005(3).

scientific matters.³²⁶ If consultations between the parties and the good offices of the Free Trade Commission fail to resolve the matter, an arbitral panel of five members may be established by the Commission at the request of any consulting party.³²⁷ The Panel's initial report will be based on the parties' submissions and arguments, and on information from experts and Scientific Review Boards, and may contain findings of fact, determinations, and recommendations for the resolution of the dispute.³²⁸ Unless the parties agree otherwise, the Panel will present a final report within thirty days of the initial report, which will be published fifteen days after its transmission to the Commission.³²⁹ The parties will then agree on the resolution of the dispute, which 'normally shall conform with the determinations and recommendations of the panel', and either not implement a measure or remove a measure which does not conform with the NAFTA, or provide compensation.³³⁰ If no agreement is reached within thirty days, the complaining party may suspend the application to the party in breach of benefits of equivalent effect until agreement is reached.³³¹ Agreed interpretations of the NAFTA by the Commission may be submitted to national courts or bodies, but the NAFTA excludes rights of action before domestic courts on the ground that a measure by another party is inconsistent with the NAFTA.³³²

North American Agreement on Environmental Cooperation

To counter criticisms of the inadequate provisions of the NAFTA on environmental matters, in September 1993 the three NAFTA parties adopted a supplementary North American Agreement on Environmental Cooperation to support the environmental goals and objectives of NAFTA.³³³ The Agreement's general objectives include protecting and improving the environment, promoting sustainable development, enhancing compliance with environmental laws and regulations, and promoting pollution prevention.³³⁴ The Agreement's general commitments address information, education, environmental assessment and promoting the use of economic instruments; it does not affect rights and obligations under other applicable international environmental agreements.³³⁵ Marginally more substantive are the obligations which require each party to 'ensure that its laws and regulations provide for high levels of environmental protection' and to effectively enforce these laws and regulations through governmental action and the availability of judicial and administrative enforcement proceedings to sanction or remedy violations.³³⁶ Each party is also required to ensure that 'persons with a legally recognised right under its law in a particular matter' have appropriate access to enforcement proceedings, and to ensure that such proceedings are fair, open and equitable and subject to procedural guarantees.³³⁷

The Agreement created a Commission for Environmental Cooperation to oversee implementation of the Agreement and its further development, comprising a Council, secretariat and Joint

³²⁶ Art. 2005(4).

³²⁷ Art. 2008(1) and (2). Three such disputes have been determined by NAFTA Panels: *Tariffs Applied by Canada to Certain US Origin Agricultural Products*, Final Panel Report, File No. CDA-95-2008-01, 1996 FTAPD LEXIS 10 (1996); *The US Safeguard Action Taken on Broom Corn Brooms from Mexico*, Final Panel Report, File No. USA-97-2008-01 (1998); and *Cross-Border Trucking Services*, Final Report of the Panel, File No. USA-MEX-98-2008-01 (2001). In addition to these disputes, note should be taken of the following panel reports issued under the Canada-United States Free-Trade Agreement (FTA) in *Salmon and Herring and Lobsters from Canada* (see 3rd edn, pp. 852-4).

³²⁸ Art. 2016. ³²⁹ Art. 2017. ³³⁰ Art. 2018. ³³¹ Art. 2019(1). ³³² Arts. 2020 and 2021.

³³³ Washington, Ottawa and Mexico City, 8, 9, 12 and 14 September 1993, in force 1 January 1994, 32 ILM 1480 (1993). See also the North American Agreement on Labor Cooperation, 32 ILM 1499 (1993).

³³⁴ Art. 1. ³³⁵ Arts. 2 and 40. ³³⁶ Arts. 3 and 5(1) and (2). ³³⁷ Arts. 6(2) and 7.

Public Advisory Committee.³³⁸ The Council has limited powers to adopt non-binding recommendations on a wide range of matters, although it has a more substantive role in the enforcement process. The secretariat may consider submissions from any non-governmental organisation or person asserting that a party is 'failing to effectively enforce its environmental law' and can request a response from the party concerned if it determines that the submission so merits.³³⁹ The secretariat may be instructed by the Council, by a two-thirds vote, to prepare a 'factual record' which may be made public by the Council.³⁴⁰ The Council may also, upon request of any party and by a two-thirds vote, establish an Arbitral Panel to address an 'alleged persistent pattern of failure by the party complained against to effectively enforce its environmental law' involving companies or sectors which produce goods or provide services which are traded between the parties or which compete with the goods or services of another party.³⁴¹ Panel reports should lead to an agreement between the disputing parties on a mutually satisfactory action plan, which will normally conform with the Panel's recommendations.³⁴² Non-implementation of the action plan may lead to the Panel being reconvened and a monetary enforcement assessment being imposed, the non-payment of which may lead to the suspension of benefits.³⁴³

Border Environment Cooperation Commission, and North American Development Bank

The United States and Mexico also adopted an Agreement Concerning the Establishment of a Border Environment Cooperation Commission and a North American Development Bank.³⁴⁴ The Commission's purpose is to preserve, protect and enhance the environment of the border region by developing environmental infrastructure projects and arranging public and private financing for such projects.³⁴⁵ The Bank provides financing for projects certified by the Commission or for community adjustments and investments supporting the purposes of NAFTA that have been endorsed by the United States or Mexico.³⁴⁶ The Bank is capitalised at \$3 billion USD, which is divided in equal shares between Mexico and the United States.

African Economic Community

The Treaty Establishing the African Economic Community was adopted in 1991 to promote interrelated objectives, including: economic, social and cultural development and the integration of African economies; cooperation in all fields of human endeavour to raise the standards of living of African peoples; and to 'co-ordinate and harmonise policies among existing and future economic communities in order to foster the gradual establishment of the [African Economic] Community'.³⁴⁷ The Treaty sets forth a range of measures that are to be taken towards the

³³⁸ Arts. 8–19. See www.cec.org ³³⁹ Art. 14. On CEC enforcement, see Chapter 5, pp. 177–8.

³⁴⁰ Art. 15. The procedure has been used by NGOs in all three of the NAFTA states parties to raise issues of non-compliance with environmental laws. Factual records have been produced in several cases but as yet no Arbitral Panel has been established to hear a complaint. Records of the submissions made and the factual reports and responses of NAFTA parties are made available by the Commission for Environmental Cooperation on its website, www.cec.org/sem-submissions/factual-records

³⁴¹ Art. 24(1); and see Arts. 22–37. 'Environmental law' is defined at Art. 45(2). ³⁴² Art. 34.

³⁴³ Arts. 34–36 and Annexes 34 (Monetary Enforcement Assessments), 36A (Canadian Domestic Enforcement and Collection) and 36B (Suspension of Benefits).

³⁴⁴ Washington and Mexico City, 16 and 18 November 1993, in force 1 January 1994, 32 ILM 1545 (1993).

³⁴⁵ Chapter I, Art. 1. See also www.becc.org ³⁴⁶ Chapter II, Art. I. See also www.nadb.org

³⁴⁷ Abuja, 3 June 1991, in force May 1994, 30 ILM, 1241 (1991).

achievement of those objectives. At their heart is the commitment to abolish customs duties and non-tariff barriers among member states, together with a commitment to the 'harmonisation and co-ordination of environmental protection policies'.³⁴⁸ The Treaty is silent as to how it will address those environmental laws of its member states that are also non-tariff barriers, and it does not propose a basis upon which the balance between environmental objectives and free trade objectives is to be struck. It does, however, include several provisions that suggest that the environment will not necessarily be accorded a significantly lower status. By Article 58, the member states undertake to 'promote a healthy environment' and, to that end, agree to adopt national, regional and continental policies, strategies and programmes, and to establish institutions for the protection and enhancement of the environment. Moreover, member states commit themselves to accelerating the process leading to 'ecologically rational, economically sound and socially acceptable development policies', to take every appropriate step to ban the importation and dumping of hazardous wastes in their territories, and to cooperate in accordance with the yet-to-be-negotiated Protocol on the Environment.³⁴⁹

The Treaty therefore provides a basis for the development of regional and continental environmental policies, much in the same way that the original EU Treaty served, in the name of economic integration, as the basis for the development of an extensive body of environmental laws aimed both at establishing basic standards and at removing barriers to trade.

Competition and Subsidies

Closely related to international trade obligations are the rules that prohibit anti-competitive behaviour that distorts trade. These rules, established by the WTO/GATT and some regional trading blocs, such as the EU, are potentially significant for environmental issues. They are intended, in large part, to supplement free trade obligations by limiting anti-competitive practices that might distort competition and consequently affect trade between states.

Competition law has intersected with the environment in at least three ways. First, environmental considerations influence the application of rules prohibiting or limiting the grant by governments and other public authorities of subsidies (state aids). As early as 1972, the OECD Council recommended that environmental protection measures should not be accompanied by subsidies that would create significant distortions in international trade and investment, although exceptions or special arrangements may occur.³⁵⁰ More recently, questions have arisen whether government support to environmentally friendly technologies – such as renewable energy – are also caught by subsidies rules under trade agreements. Second, environmental considerations may be taken into account in applying competition rules to agreements between companies, including 'environmental agreements'.³⁵¹ Third, the failure to integrate environmental costs into production costs has led to charges of 'environmental dumping' in international trade. The development and application of the polluter pays principle, described in

³⁴⁸ Art. 4(2)(d) and (o); see also Arts. 29–31 on the elimination of customs duties and non-tariff barriers.

³⁴⁹ Arts. 58(2), 59 and 60.

³⁵⁰ OECD Council Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies, C(72)128 (1972), Annex, paras. 4 and 5.

³⁵¹ On environmental agreements, see Chapter 4, p. 138; see generally R. Khalastchi and H. Ward, 'New Instruments for Sustainability: An Assessment of Environmental Agreements under Community Law', 10 *Journal of Environmental Law* 257 (1998).

Chapter 6, is closely related to competition rules, since it is intended in part to ensure that the costs of the environmental measures necessary to protect the environment should be reflected in the costs of goods and services which cause pollution in their production or consumption.

Subsidies

The introduction of environmental considerations into the law of subsidies has at least two consequences. It may allow the grant of subsidies that would otherwise be prohibited for activities that are environmentally beneficial. And it may allow enforcement bodies to prevent subsidies from being granted to activities that are particularly harmful to the environment. Although Agenda 21 called for the removal or reduction of subsidies that do not conform with sustainable development objectives,³⁵² international legal developments (with the exception of the limited progress made on fisheries subsidies in the Doha Round negotiations) have so far focused on the first of these two aspects.³⁵³ In 1974, the OECD Council recommended that in application of the polluter pays principle the state should not, as a general rule, assist polluters in bearing the costs of pollution control whether by means of subsidies, tax advantages or other measures.³⁵⁴ The OECD Council further recommended that the grant of such assistance for pollution control should be strictly limited and be notified to OECD member countries, and must comply with three conditions:

- (1) it should be selective and restricted to those parts of the economy, such as industries, areas or plants, where severe difficulties would otherwise occur;
- (2) it should be limited to well-defined transitional periods, laid down in advance and adapted to the specific socio-economic problems associated with the implementation of a country's environmental programme; and
- (3) it should not create significant distortions in international trade and investment.³⁵⁵

The OECD rules influenced those of the EU. Article 107 (formerly Article 87) of the EU Treaty prohibits state aids (subsidies) which distort competition and affect trade between member states by favouring certain undertakings or the production of certain goods unless it has a social character, makes good damage caused by natural disasters or other exceptional occurrences, or is 'aid granted to the economy of certain areas of the Federal Republic of Germany affected by the division of Germany, insofar as such aid is required in order to compensate for the economic disadvantages caused by that division'.³⁵⁶ However, state aid may be held compatible with the common market by the European Commission if it:

³⁵² Agenda 21, para. 8.32(b). See also the WSSD Plan of Implementation, calling for completion of the work programme of the Doha Ministerial Declaration on subsidies so as to 'encourage reform of subsidies that have considerable negative effects on the environment and are incompatible with sustainable development' (para. 91(b)).

³⁵³ In respect of calls for the removal of fossil fuel subsidies, see S. Z. Bigdeli, 'Will the "Friends of Climate" Emerge in the WTO? The Prospects of Applying the "Fisheries Subsidies" Model to Energy Subsidies', 1 *Carbon and Climate Law Review* 81 (2008). No language was included in the Paris Agreement dealing with fossil fuel subsidies though commitments to phase out inefficient fossil fuel subsidies have been made in other forums such as the G20 and APEC.

³⁵⁴ OECD Council Recommendation C(74)223, Chapter 6, Part III, para. 1. See also OECD Council Recommendation C(89) 88/FINAL, Recommendation of the Council Concerning the Application of the Polluter-Pays Principle to Accidental Pollution; and OECD Joint Working Party on Trade and Environment, 'The Polluter Pays Principle as it Relates to International Trade', 23 December 2002, COM/ENV/ITD(2001)44/FINAL.

³⁵⁵ Paras. 2 and 4.

³⁵⁶ The ECJ has held that aid must involve a direct or indirect transfer of state resources to undertakings: see Case C-379/98, *PreussenElektra AG v. Schlesweg AG* [2001] ECR I-2099 (provision requiring that private electricity supply

1. promotes the economic development of certain areas where the standard of living is abnormally low or where there is serious underemployment;
2. promotes the execution of an important project of common European interest;
3. remedies a serious disturbance in the economy of a member state;
4. facilitates the development of certain economic activities and does not adversely affect trading conditions to an extent contrary to the common interest;
5. promotes culture and heritage conservation where such aid does not affect trading conditions and competition in the Union to an extent that is contrary to the common interest; or
6. as otherwise decided by the Council.³⁵⁷

The EU approach on state aid for environmental protection is now governed by its 2014 Guidelines, although since 1975 the grant of environmental aid in the EU has been the subject of special rules and practice.³⁵⁸ The 2014 Guidelines were adopted as one instrument to implement the Europe 2020 strategy and the environmental aspects of its energy and climate-change-related targets (20 per cent reduction in greenhouse gas emissions from 1990 levels by 2020, a saving of 20 per cent of the EU's energy consumption compared to 2020 projections, and a target of a 20 per cent share for renewables by 2020).³⁵⁹ Compared to the previous 2008 Guidelines, the 2014 Guidelines extend significantly beyond the field of environmental protection to energy market regulation. A particular focus of the 2014 Guidelines is on state aid for renewable energy, which has grown enormously in the EU in recent years but has raised concerns over potential market distortions and costs for consumers. The 2014 Guidelines articulate 'common assessment principles' that the Commission will apply in assessing whether state aid measures are compatible with the internal market.³⁶⁰ The Commission maintains a register of state aid decisions on environmental aid.³⁶¹

Article XVI(1) of the GATT has a similar objective to Article 107 of the EU Treaty, although the former does not prohibit subsidies or declare them void per se. Rather, Article XVI(1) requires any contracting party to notify the other contracting parties on the nature and extent of any subsidisation and its estimated effect on imports or exports, and requires discussions between the parties concerned, or with the contracting parties, about the possibility of limiting subsidies which are determined to cause or threaten serious prejudice to the interests of any other contracting party.

Under the auspices of the GATT Uruguay Round, a Subsidies and Countervailing Measures (SCM) Agreement was negotiated, which is binding on all WTO members. The Agreement defines

undertakings must purchase electricity produced in their area of supply from renewable energy sources at minimum prices higher than the real economic value of that type of electricity, and that distributing the financial burden resulting from that obligation between those electricity supply undertakings and upstream private electricity network operators does not constitute state aid within the meaning of Art. 107(1) of the EU Treaty).

³⁵⁷ Art. 107(3). See also the compilation of EU state aid rules in force available at http://ec.europa.eu/competition/state_aid/legislation/compilation/index_en.html

³⁵⁸ EC Commission, 'Community Approach to State Aids in Environmental Matters', 7 November 1974, Fourth Report on Competition Policy, points 180–2.

³⁵⁹ Communication from the Commission – Guidelines on State Aid for Environmental Protection and Energy, OJ C200, 28 June 2014, 1, Part 1.3. The Guidelines also reference the 2030 Framework's energy and climate objectives calling for (i) a reduction in greenhouse gas emissions by 40 per cent relative to 1990 levels; (ii) an EU-wide binding target for renewable energy of at least 27 per cent; (iii) renewed ambitions for energy efficiency policies; and (iv) a new governance system and a set of new indicators to ensure a competitive and secure energy system.

³⁶⁰ 2014 Guidelines, Part 3.1. ³⁶¹ See http://ec.europa.eu/competition/state_aid/register

certain 'non-actionable' subsidies, including those related to environmental protection. It states, quite specifically, that non-actionable environmental subsidies cover:

assistance to promote adaptation of existing facilities to new environmental requirements imposed by law and/or regulations which result in greater constraints and financial burden on firms, provided that the assistance:

- (i) is a one-time non-recurring measure; and
- (ii) is limited to 20 per cent of the cost of adaptation; and
- (iii) does not cover the cost of replacing and operating the assisted investment, which must be fully borne by firms; and
- (iv) is directly linked to and proportionate to a firm's planned reduction of nuisances and pollution, and does not cover any manufacturing cost savings which may be achieved; and
- (v) is available to all firms which can adopt the new equipment and/or production processes.³⁶²

In November 2001, the WTO Doha Ministerial Declaration agreed to negotiations aimed at clarifying and improving disciplines under the SCM Agreement, in particular fisheries subsidies.³⁶³ Currently, the fisheries subsidies negotiations are ongoing in the Negotiating Group on Rules, with some signs that agreement on reducing environmentally harmful subsidies will be reached.³⁶⁴ In 2005, at the Hong Kong WTO Ministerial Council, the Ministerial Declaration noted the 'broad agreement' for strengthening WTO disciplines on subsidies in the fisheries sector 'including through the prohibition of certain forms of fisheries subsidies that contribute to overcapacity and over-fishing'. The Declaration called on participants 'promptly to undertake further detailed work to, inter alia, establish the nature and extent of those disciplines, including transparency and enforceability'. The Declaration further noted that '[a]ppropriate and effective special and differential treatment for developing and least developed Members should be an integral part of the fisheries subsidies negotiations, taking into account the importance of this sector to development priorities, poverty reduction, and livelihood and food security concerns'.³⁶⁵

More recently, the WTO/GATT subsidies rules have been a focus for disputes over members' renewable energy programmes, especially those that mandate a domestic content requirement. There have now been six such disputes since the first challenges were initiated in 2010 by Japan and the EU against a feed-in-tariff maintained by the Canadian province of Ontario.³⁶⁶ In the

³⁶² Art. 8.2(c) of the Agreement on Subsidies and Countervailing Measures. In November 2001, the WTO Doha Ministerial Declaration agreed to negotiations aimed at clarifying and improving disciplines under the Subsidies Agreement, in particular fisheries subsidies.

³⁶³ Doha Ministerial Declaration of the Fourth Ministerial Conference, Doha, Qatar, 14 November 2001, WT/MIN(01)/DEC/1, available at www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm, para. 28.

³⁶⁴ UNEP, *Fisheries Subsidies, Sustainable Development and the WTO* (2010).

³⁶⁵ WT/MIN(05)/DEC, 18 December 2005, Annex D, para. 9.

³⁶⁶ *Canada – Certain Measures Affecting the Renewable Energy Generation Sector*, Reports of the Appellate Body, WTO Docs. WT/DS412/AB/R, WT/DS426/R, 6 May 2013. Other disputes that have settled or for which consultations are continuing include *China – Measures Concerning Wind Power Equipment* (brought by US), WT/DS419; *EU – Certain Measures Affecting the Renewable Energy Generation Sector* (brought by China), WT/DS452; *US – Certain Measures Relating to the Renewable Energy Sector* (brought by India), WT/DS510; *EU – Biodiesel* (brought by Argentina), WT/DS443 and WT/DS459.

disputes that have proceeded past the consultation stage to Panel and Appellate Body reports, WTO dispute settlement bodies have uniformly ruled that renewable energy programmes that include domestic sourcing requirements discriminate against imported renewable energy products.³⁶⁷ In contrast to the flurry of disputes over renewable energy subsidies, no disputes have been initiated concerning fossil fuel subsidies, which dwarf those provided to the renewable energy sector.³⁶⁸

Anti-Competitive Agreements

The second area of competition law with environmental implications relates to rules that prohibit anti-competitive agreements and practices by companies and other persons. The WTO does not yet have rules on this subject, but Article 101 (formerly Article 81) of the EU Treaty prohibits agreements, decisions and concerted practices that affect trade between member states and prevent, restrict or distort competition. Under Article 102 (formerly Article 82), similar prohibitions apply to abuses by companies of dominant positions, such as price-fixing and limiting markets and technical developments. Under Article 101(3), the European Commission may find that the Article 101 prohibition is not applicable to agreements, decisions or practices, or categories thereof, which are considered to bring public benefits; these public benefits include improving the production or distribution of goods or promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit, provided that the agreement does not impose restrictions which are not indispensable to the attainment of these objectives or eliminate competition in respect of a substantial part of the products in question. This is broad enough language to justify exemptions for technical or economic progress that contributes to environmental protection, thereby benefiting consumers.³⁶⁹ In *Cali v. Servizi ecologici porto di Genova SpA*, the ECJ ruled that Article 102 of the EU Treaty is not applicable to anti-pollution surveillance with which a body governed by private law has been entrusted by the public authorities in an oil port of a member state, even where port users must pay dues to finance that activity.³⁷⁰ The European Commission has been willing to take into account environmental considerations in applying Articles 101 and 102, and has also applied Article 101 to 'environmental agreements' between companies.³⁷¹ By way of example, in *Re Independent Power Generators*, which concerned a joint venture agreement in the energy sector which included certain restrictive practices (agreement not to compete), one of the factors the Commission took into account in deciding not to object to a long-term exclusive purchase agreement, which might otherwise have been caught, was the intended use by the joint venture of combined cycle gas

³⁶⁷ In addition to the Canadian cases, see *India – Solar Cells*, Report of the Appellate Body, WT/DS456/AB/R, 16 September 2016.

³⁶⁸ H. B. Asmelash, 'Energy Subsidies and WTO Dispute Settlement: Why Only Renewable Energy Subsidies Are Challenged', 18(2) *J Int Economic Law* 261 (2015).

³⁶⁹ European Commission, Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-operation Agreements, OJ C11, 14 January 2011, 7, para. 18 and accompanying n. 1. Note that these Guidelines integrate discussion of environmental agreements into various chapters, as they contain no separate chapter on environmental agreements as was previously the case.

³⁷⁰ Case C-343/95, *Diego Cali and Figli Srl v. Servizi Ecologici Porto di Genova SpA* [1997] ECR I-1547.

³⁷¹ See the examples cited in D. Geradin, 'EC Competition Law and Environmental Protection', 2 *Yearbook of European Environmental Law* 117 (2002).

turbine generators or clean coal-fired systems, which was considered to be efficient generating technology offering environmental advantages.³⁷²

Anti-Dumping

The third area of competition law that is relevant in relation to environmental protection is that of dumping. Under Article VI(1) of the GATT, as elaborated by the Uruguay Round Anti-Dumping Agreement,³⁷³ dumping (which is defined as the introduction of products into the market of another country at 'less than normal value of the products') will be condemned if it causes or threatens material injury to an established industry in the territory of a contracting party or materially retards the establishment of a domestic industry. The product is introduced at less than normal value if the price of the product exported from one country to another:

1. is less than the comparable price, in the ordinary course of trade, for the like product when destined for consumption in the exporting country; or
2. in the absence of such domestic price, is less than either:
 - (i) the highest comparable price for the like product for export to any third country in the ordinary course of trade; or
 - (ii) the cost of production of the product in the country of origin plus a reasonable addition for selling cost and profit.

These provisions allow for 'environmental dumping' arguments to be raised in respect of price differentials resulting from the failure to integrate environmental costs into production costs. GATT Article VI does require due allowance to be made for, inter alia, 'other differences affecting price comparability', and this raises the question of whether, and if so to what extent, environmental costs must be reflected in production costs.³⁷⁴ It will be recalled that the Rio Declaration sends out conflicting messages which call for a balancing of interests: Principle 11 states that environmental standards should reflect the environmental and developmental context to which they apply and that standards applied by some countries may be inappropriate and of unwarranted social cost to other countries, particularly developing countries. Principle 16, on the other hand, calls on states to promote the internalisation of environmental costs. Arguments over 'environmental dumping' have arisen in disputes between the EU and producers of biodiesel such as Argentina, which have complained that anti-dumping duties imposed by the EU violate WTO anti-dumping rules.³⁷⁵ In October 2016, the Appellate Body upheld Argentina's claims that the duties imposed by the EU were illegal.³⁷⁶

³⁷² European Commission Notice (Case IV/34.078) [1992] 5 CMLR 88 at 89.

³⁷³ Agreement on the Implementation of Article VI of the General Agreement on Tariffs and Trade (Marrakesh), 15 April 1994, in force 1 January 1995, 1868 UNTS 201.

³⁷⁴ See also the Agreement on Subsidies and Countervailing Measures, above.

³⁷⁵ See also, *EU – Anti-Dumping Measures on Biodiesel from Indonesia*, WT/DS480 (Panel composed on 4 November 2015).

³⁷⁶ *European Union – Anti-Dumping Measures on Biodiesel from Argentina*, Report of the Appellate Body, WT/473/AB/R, 6 October 2016. A similar finding was made by the General Court of the EU on 15 September 2016.

FOREIGN INVESTMENT

Whereas international trade law governs interstate trade in goods and services (including those with potential implications for environmental protection), international investment law regulates the treatment of foreign investors. Foreign direct investment is now the largest source of external finance for developing countries, having outstripped public sector overseas development assistance since the early 1990s. Flows of foreign direct investment have been promoted in order to 'support sustainable development activities',³⁷⁷ and the objective of increasing foreign investment in areas of environmental need is also reflected in mechanisms established under various environmental agreements, such as the Clean Development Mechanism established by the 1997 Kyoto Protocol,³⁷⁸ as well as in provisions of various environmental agreements promoting the transfer of technology.³⁷⁹

Among the international mechanisms available to encourage foreign direct investment, two are especially important for present purposes: the first comprises investment treaties – bilateral and multilateral – which seek to protect foreign investments against certain governmental acts, in particular expropriation and unfair treatment; the second comprises arrangements – domestic and international – which seek to provide guarantees (insurance and other) against the acts prohibited by investment treaties. Both mechanisms are increasingly connected to international environmental rules, in the sense that they may impact upon the ability of states to adopt certain environmental measures at the national level or through multilateral environmental agreements, or encourage states to reduce their environmental standards in order to attract foreign investment.³⁸⁰ In international case law on the topic (discussed further below), the principal issue has been the manner in which the protections that investment treaties are intended to afford against expropriation and other prohibited acts are applied when such acts are motivated by environmental (or other social) objectives, including those which are taken in accordance with international environmental obligations. In relation to export credit insurance, the principal issues concern the extent to which such arrangements should be available to projects which may be environmentally harmful, and what mechanisms are available to identify such projects at an early stage of their development.

Investment Treaties

The rules of international law protecting the property rights of foreigners (traditionally referred to as 'aliens') are well established. Customary international law grants states a broad measure of discretion in relation to the treatment they accord to the property of aliens on their territory, including foreign investment. According to one leading commentator, 'far-reaching interference with private property, including that of aliens, is common in connection with such matters as

³⁷⁷ See e.g. WSSD Plan of Implementation, para. 78. ³⁷⁸ Chapter 8, pp. 307–16.

³⁷⁹ Chapter 15, pp. 720–7; H. French, 'Harnessing Private Capital Flows for Environmentally Sustainable Development' (Worldwatch Paper 139, 1998); K. Miles, 'Innovative Financing: Filling in the Gaps on the Road to Sustainable Environmental Funding', 14(3) *Review of European Community and International Environmental Law* 202 (2005).

³⁸⁰ For a review of literature on the environmental effects of foreign investment, see Note by the OECD Secretariat, DAF/MAI/RD(97)33/Rev1 (www1.oecd.org/daf/mai/pdf/ng/ng9733r1e.pdf); M. Rauscher, 'International Trade, Foreign Investment, and the Environment', in K.-G. Mäler and J. R. Vincent (eds.), *Handbook of Environmental Economics* (New York: Elsevier, 2005), vol. 3, 1403.

taxation, measures of police, public health, the administration of public utilities and the planning of urban and rural development'.³⁸¹ To the list may be added measures intended to protect the environment, which could have the effect of limiting the economic benefits of an investment, or of bringing such benefits to an end altogether. It is accepted, however, that the state's discretion is not unlimited, and customary law requires a state to observe certain minimum international standards in respect of alien property. These standards are relatively well developed in relation to acts of expropriation and due process rights (including a right of access to courts and the principle of equality before the law). In assessing the legality of such acts, it is apparent that a balance must be struck between the legitimate interests of the state hosting the investment and the need to protect such investments from excessive interference.³⁸²

The minimum standards set by customary international law are supplemented by more specific rules established by treaties. Close to 3,000 bilateral investment treaties (BITs) have now been adopted, and they are joined by a growing number of multilateral agreements applicable within a region or to a particular economic activity that contain investment provisions, such as the 1994 North American Free Trade Agreement (NAFTA) and the 1994 Energy Charter Treaty.³⁸³ Efforts to establish a global regime – in the mid 1990s under the auspices of the OECD, the Multilateral Investment Agreement (MIA)³⁸⁴ – failed, and subsequent efforts to renew these negotiations under the auspices of the WTO have stalled.³⁸⁵ Bilateral and multilateral treaties establish specific rules providing substantive protections, together with procedures for resolving disputes between foreign investors and host states, usually in the form of international adjudicatory arrangements.

Substantive Rules

Each BIT and multilateral agreement establishes its own substantive rules governing the extent of the protection to be granted to foreign investments. In general terms, however, the protection extends to two kinds of act: a prohibition on acts or measures which expropriate or relatedly interfere with the investment, and a prohibition on acts or measures which constitute 'unfair treatment'.

In relation to rules prohibiting expropriation, it is important to note that the obligations imposed on the host state will not be identical in each bilateral treaty, so that each one must be considered on its own merits and interpreted and applied in accordance with the normal rules of treaty interpretation.³⁸⁶ As one leading commentary has put it:

³⁸¹ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (Harlow: Longman, 1992, 9th edn), 912; see generally M. Sornarajah, *The International Law on Foreign Investment* (Cambridge: Cambridge University Press, 2010, 3rd edn).

³⁸² Jennings and Watts, *Oppenheim's International Law*, 913–15.

³⁸³ As of February 2017, the UNCTAD Investment Policy Hub records a total of 2,967 BITs and 368 treaties with investment provisions (TIPs), at <http://investmentpolicyhub.unctad.org/IIA>

³⁸⁴ OECD, 'The MAI Draft Consolidated Text' (as of 22 April 1998), DAF/MAI(98)7(REV1), available at www.oecd.org/daf/mai/pdf/ng/ng987r1e.pdf. One of the central sticking points concerned the relationship between the obligation not to expropriate or otherwise interfere with an investment, on the one hand, and the maintenance, adoption or enforcement of domestic environmental standards, on the other.

³⁸⁵ The Doha WTO Ministerial Declaration revived the idea of global rules, within the framework of the WTO. Ministers recognised 'the case for a multilateral framework to secure transparent, stable and predictable conditions for long-term cross-border investment, particularly foreign direct investment, that will contribute to the expansion of trade', and agreed that negotiations would commence in 2003 with a view to concluding the negotiations by January 2005.

³⁸⁶ On the 1969 Vienna Convention on the Law of Treaties, see Chapter 4, pp. 107–16.

The most common terms . . . are expropriation and nationalization, but in addition some BITs refer to 'dispossession', 'taking', 'deprivation' or 'privation'. These latter terms are considered quite wide in scope and would include expropriation, nationalization and the transfer of property to nationals of the host state (i.e. indigenisation). BITs generally do not define the term expropriation or any of the other terms denoting similar measures of forced dispossession . . . Such apparent reluctance to attempt a definition of 'expropriation' in the BITs may be explained by the fact that a host state, as is well known, can take a number of measures which have a similar effect of expropriation or nationalization, although they do not *de jure* constitute an act of expropriation; such measures are generally termed 'indirect', 'creeping', or '*de facto*' expropriation. The expropriation clause in most BITs therefore commonly includes expropriation and nationalization as well as a reference to indirect measures, and accords to them all the same legal treatment.³⁸⁷

In broad terms, the approach taken by bilateral treaties is followed by multilateral agreements seeking to promote and protect foreign investments. The approach taken by Chapter 11 of the NAFTA is not unusual in this regard, although its language has led to varied approaches from the growing number of arbitral tribunals charged with resolving disputes. Article 1102 imposes a 'national treatment' requirement,³⁸⁸ and Article 1106 prohibits certain 'performance requirements'.³⁸⁹ Additionally, Article 1105(1) provides:

Each Party shall accord to investments of investors of another Party treatment in accordance with international law, including fair and equitable treatment and full protection and security.

And Article 1110(1) provides:

No Party may directly or indirectly nationalize or expropriate an investment of an investor of another Party in its territory or take a measure tantamount to nationalization or expropriation of such an investment ('expropriation'), except:

- (a) for a public purpose;
- (b) on a non-discriminatory basis;
- (c) in accordance with due process of law and Article 1105(1); and
- (d) on payment of compensation in accordance with paragraphs 2 through 6.³⁹⁰

³⁸⁷ On 'indirect takings', see R. Higgins, 'The Taking of Property by the State', 176 *Recueil des Cours* 267 (1982-III).

³⁸⁸ Art. 1102(1) provides: 'Each Party shall accord to investors of another Party treatment no less favourable than that it accords, in like circumstances, to its own investors with respect to the establishment, acquisition, expansion, management, conduct, operation, and sale or other disposition of investments.'

³⁸⁹ Art. 1106(1) provides that no party may impose or enforce certain performance requirements in relation to investments, including requirements to transfer technology, a production process or other proprietary knowledge to a person in its territory, except when the requirement is imposed or the commitment or undertaking is enforced by a court, administrative tribunal or competition authority to remedy an alleged violation of competition laws or to act in a manner not inconsistent with other provisions of NAFTA (Art. 1106(1)(f)). Art. 1106(2) provides: 'A measure that requires an investment to use a technology to meet generally applicable health, safety or environmental requirements shall not be construed to be inconsistent with paragraph 1(f).'

³⁹⁰ Art. 1110(2) provides: 'Compensation shall be equivalent to the fair market value of the expropriated investment immediately before the expropriation took place ("date of expropriation"), and shall not reflect any change in value occurring because the intended expropriation had become known earlier. Valuation criteria shall include going

Article 1114(1) of NAFTA (Environmental Measures) provides that nothing in Chapter 11

shall be construed to prevent a Party from adopting, maintaining or enforcing any measure otherwise consistent with this Chapter that it considers appropriate to ensure that investment activity in its territory is undertaken in a manner sensitive to environmental concerns.

This language indicates a hierarchy between the Article 1105 and 1110 obligations of the NAFTA parties and their rights in relation to environmental protection measures, and does not suggest that environmental objectives can inform the interpretation or application of Article 1105 and 1110 obligations. However, Article 1114(2) directs parties not to relax their environmental rules to attract foreign investment, indicating the parties' recognition that:

it is inappropriate to encourage investment by relaxing domestic health, safety or environmental measures. Accordingly, a Party should not waive or otherwise derogate from, or offer to waive or otherwise derogate from, such measures as an encouragement for the establishment, acquisition, expansion or retention in its territory of an investment of an investor. If a Party considers that another Party has offered such an encouragement, it may request consultations with the other Party and the two Parties shall consult with a view to avoiding any such encouragement.

The 1994 Energy Charter Treaty reflects a similar approach, although it is limited to investments relating to the energy sector. Part 3 addresses investment promotion and protection, and Article 10(1) provides:

Each Contracting Party shall, in accordance with the provisions of this Treaty, encourage and create stable, equitable, favourable and transparent conditions for Investors of other Contracting Parties to make Investments in its Area. Such conditions shall include a commitment to accord at all times to Investments of Investors of other Contracting Parties fair and equitable treatment. Such Investments shall also enjoy the most constant protection and security and no Contracting Party shall in any way impair by unreasonable or discriminatory measures their management, maintenance, use, enjoyment or disposal. In no case shall such Investments be accorded treatment less favourable than that required by international law, including treaty obligations. Each Contracting Party shall observe any obligations it has entered into with an Investor or an Investment of an Investor of any other Contracting Party.

concern value, asset value including declared tax value of tangible property, and other criteria, as appropriate, to determine fair market value.'

Article 13(1) provides:

Investments of Investors of a Contracting Party in the Area of any other Contracting Party shall not be nationalized, expropriated or subjected to a measure or measures having effect equivalent to nationalization or expropriation (hereinafter referred to as 'Expropriation') except where such Expropriation is:

- (a) for a purpose which is in the public interest;
- (b) not discriminatory;
- (c) carried out under due process of law; and
- (d) accompanied by the payment of prompt, adequate and effective compensation.³⁹¹

Dispute Settlement

Beyond the substantive obligations imposed in the bilateral and multilateral agreements, the arrangements almost always provide a means for internationalising the settlement of disputes.³⁹² The investor will usually wish to avoid the national courts of the host state, and the host state will wish to avoid the national courts of the investor, or of a third state. The preferred option is therefore to provide for the settlement of disputes relating to claims of expropriation or unfair treatment to be addressed by international arbitration. Numerous options are available, but the tendency is either resort to the World Bank's International Centre for Settlement of Investment Disputes (ICSID)³⁹³ or recourse to arbitration under the rules of the United Nations Commission on International Trade Law (UNCITRAL).³⁹⁴ The attraction of ICSID is that it provides an established institutional structure, which the UNCITRAL rules do not. It is to be noted that initiation of the procedure is almost invariably at the instigation of the investor alone; since the host state generally has no express rights granted under the BIT or the multilateral treaty, *vis-à-vis* the investor, no right is generally granted to it to invoke proceedings.

The NAFTA and the Energy Charter Treaty illustrate the options. Under Article 1120(1) of the NAFTA, once six months have elapsed since the events giving rise to a claim, a disputing investor may submit the claim to arbitration under:

- (a) the ICSID Convention, provided that both the disputing Party and the Party of the investor are parties to the Convention;
- (b) the Additional Facility Rules of ICSID, provided that either the disputing Party or the Party of the investor, but not both, is a party to the ICSID Convention; or
- (c) the UNCITRAL Arbitration Rules.

³⁹¹ It goes on to provide: 'Such compensation shall amount to the fair market value of the Investment expropriated at the time immediately before the Expropriation or impending Expropriation became known in such a way as to affect the value of the Investment (hereinafter referred to as the "Valuation Date"). Such fair market value shall at the request of the Investor be expressed in a Freely Convertible Currency on the basis of the market rate of exchange existing for that currency on the Valuation Date. Compensation shall also include interest at a commercial rate established on a market basis from the date of Expropriation until the date of payment.'

³⁹² On the settlement of disputes in BITs, see R. Dolzer and M. Stevens, *Bilateral Investment Treaties* (The Hague/London: Martinus Nijhoff, 1995), ch. 5; and K. Vandeveld, *Bilateral Investment Treaties: History, Policy and Interpretation* (Oxford: Oxford University Press, 2010).

³⁹³ <https://icsid.worldbank.org/en>; see generally C. Schreuer, *The ICSID Convention: A Commentary* (Cambridge: Cambridge University Press, 2009, 2nd edn).

³⁹⁴ www.uncitral.org

Article 26 of the 1994 Energy Charter Treaty allows the investor to choose to submit the dispute to a marginally wider choice of procedures. Three months after the parties' failure to settle a dispute amicably, the investor may submit the dispute: to the courts or administrative tribunals of the state party to the dispute; to any applicable, previously agreed dispute settlement procedure; or to international arbitration or conciliation under the ICSID rules, or the ICSID Additional Facility rules (where the state is not a party to the ICSID Convention), or UNCITRAL rules, or an arbitral proceeding under the Arbitration Institute of the Stockholm Chamber of Commerce.³⁹⁵

Case Law

Within the past two decades a number of cases have been arbitrated internationally that address the relationship between domestic environmental protection measures and obligations to protect foreign investments from expropriatory and other practices. The cases have largely – but not exclusively – arisen in the NAFTA context, and in certain respects mirror the case law of the European Court of Human Rights in relation to the protection of property rights.³⁹⁶ A number of NAFTA cases are of particular interest for their implications on national and international environmental rules.³⁹⁷

Ethyl Corporation v. Canada was the first arbitral decision under Chapter 11 of NAFTA, although it settled after the jurisdiction phase. The United States investor challenged Canada's ban on inter-provincial trade in and commercial imports of MMT, a manganese-based compound which enhances the octane value of unleaded gasoline. Ethyl Corporation claimed that the ban (which had been adopted on environmental grounds) violated, inter alia, national treatment requirements and represented an act 'tantamount to an expropriation' without compensation, as required by Article 1110 of NAFTA, and claimed damages of \$251 million USD. After the arbitrators found that the NAFTA/UNCITRAL tribunal had jurisdiction,³⁹⁸ and after a Canadian procedure had found that the ban violated Canada's Agreement on Internal Trade, the parties settled the dispute, with Canada paying Ethyl \$13 million USD. It is not clear why Canada settled the case. The settlement indicated that the claim might have had some merit, and apparently encouraged other Article 1110 claims premised on the view that domestic environmental regulations could unlawfully interfere with investors' rights under NAFTA.

In *S. D. Myers Inc. v. Canada*, the United States investor challenged a Canadian legislative order banning exports of polychlorinated biphenyls (PCBs) and PCB wastes, on the ground, inter alia, of violations of Articles 1102, 1105, 1106 and 1110 of NAFTA. The Canadian ban had been adopted in November 1995 purportedly on the ground of 'a significant danger to the environment and to human life and health'; government views supporting the ban included a statement

³⁹⁵ Art. 26 provides certain limited exceptions in relation to states making declarations under the 1994 Treaty.

³⁹⁶ Chapter 17, pp. 819–23. It will be apparent that the approach taken by the European Court of Human Rights is less protective of property rights than some of the arbitral tribunals that have addressed investment disputes: see H. Mountfield, 'Regulatory Expropriations in Europe: The Approach of the European Court of Human Rights', 11 *New York University Environmental Law Journal* 136 (2003).

³⁹⁷ For information on all NAFTA cases, see www.naftalaw.org. Beyond the cases discussed here, a number of other cases also touch on environmental subjects: see *Azinian, Davitian and Baca v. Mexico*, Award of 1 November 1998, 5 ICSID Reps 269 (no violation of Arts. 1105 and 1110 in dispute relating to waste collection and disposal concession contract); and *Waste Management Inc. v. Mexico*, Award of 30 April 2004, 43 ILM 967 (no violation of Arts. 1105 and 1110 in dispute relating to a waste collection and disposal concession contract).

³⁹⁸ *Ethyl Corporation v. Canada*, Jurisdiction Phase, 38 ILM 708 (1999).

to the effect that Canada was obliged by the terms of the 1989 Basel Convention to dispose of its own PCBs.³⁹⁹ The ban was lifted in 1997, while the proceedings were pending. The arbitral tribunal found that the ban was intended primarily to protect the Canadian PCB disposal industry from US competition and that ‘there was no legitimate environmental reason for introducing the ban’.⁴⁰⁰ In interpreting the NAFTA rules, the arbitral tribunal had regard to a range of environmental agreements, including the 1986 US–Canada Agreement Concerning the Transboundary Movement of Hazardous Waste, the 1989 Basel Convention and the 1994 North American Agreement on Environmental Cooperation, stating that:

the NAFTA should be interpreted in the light of the following general principles:

- Parties have the right to establish high levels of environmental protection. They are not obliged to compromise their standards merely to satisfy the political or economic interests of other states;
- Parties should avoid creating distortions to trade;
- Environmental protection can and should be mutually supportive.⁴⁰¹

The tribunal considered that the logical corollary of these principles was that:

Where a state can achieve its chosen level of environmental protection through a variety of equally effective and reasonable means, it is obliged to adopt the alternative that is most consistent with open trade. This corollary also is consistent with the language and the case law arising out of the WTO family of agreements.⁴⁰²

Taking into account these principles, the arbitral tribunal held that Canada had violated Article 1102 of NAFTA by not treating US and Canadian companies involved in the destruction of PCBs in ‘like circumstances’, an assessment of which should take into account circumstances that would justify governmental regulations that treat entities differently in order to protect the public interest (i.e. the environment).⁴⁰³ A majority of the arbitral tribunal ruled that the breach of Article 1102 additionally gave rise to a breach of Article 1105, by failing to provide ‘fair and equitable treatment’.⁴⁰⁴ However, the arbitral tribunal found no breach of Articles 1106 and 1110.⁴⁰⁵ The tribunal awarded the claimant \$6.05 million USD in damages, with interest.⁴⁰⁶

Metalclad Corporation v. Mexico is one of the most notorious of the NAFTA environmental cases.⁴⁰⁷ The facts bear careful consideration, indicating the context of environmental and federalism issues against which the arbitral tribunal’s approach is to be assessed. A Mexican company (COTERIN) owned a site in the valley of La Pedrera in the municipality of Guadalupe, Coahuila de Zaragoza, Mexico.

³⁹⁹ Partial Award, 11 November 2000, paras. 184–5; on the 1989 Basel Convention, see Chapter 12, pp. 620–3.

⁴⁰⁰ Paras. 194–5 (noting that ‘there were other equally effective means of encouraging the development and maintenance of a Canadian-based PCBs remediation industry’).

⁴⁰¹ Para. 220. ⁴⁰² Para. 221. ⁴⁰³ Paras. 249–57.

⁴⁰⁴ Paras. 258–66 (Arbitrator Chiasson dissented, on the ground that a finding of a violation of Art. 1105 had to be based on a demonstrated failure to meet the fair and equitable requirements of international law).

⁴⁰⁵ On Art. 1110, the tribunal concluded: ‘Canada realised no benefit from the measure. The evidence does not support a transfer of property or benefit directly to others. An opportunity was delayed. This is not an expropriation case’ (paras. 287–8).

⁴⁰⁶ Second Partial Award (Damages), 21 October 2002. ⁴⁰⁷ Award, 25 August 2000, 40 ILM 35 (2001).

located in the Mexican state of San Luis Potosi. COTERIN began operating a hazardous waste transfer station at the site in 1990, pursuant to an authority granted by the federal government of Mexico. However, 20,000 tonnes of waste were unlawfully deposited on the site without treatment or separation, and in September 1991 the federal government ordered the closure of the transfer station, which remained in effect until February 1996. Also in 1991, COTERIN applied to the municipality for a permit to construct a hazardous waste landfill at the site, but the application was refused, and the municipality's opposition to any further use of the site for the storage of hazardous wastes was reaffirmed in 1992. In 1993, COTERIN received two federal permits in respect of a hazardous waste landfill at the site, two federal environmental impact authorisations in respect of the construction and operation of the landfill, and a land-use permit issued by the state of San Luis Potosi. In 1993, Metalclad Corporation (a US investor) purchased COTERIN (and the site), without a municipal construction permit having been granted, or a decision having been given by the Mexican courts that no such permit was needed.⁴⁰⁸ It was well aware of the municipal permit issue, having made three-quarters of the purchase price contingent upon its resolution. COTERIN commenced construction of the landfill at the site without a municipal construction permit (although a further federal construction permit was issued in January 1995). In October 1994, the municipality issued a 'stop work' order due to the lack of a municipal permit. COTERIN applied for a municipal construction permit in November 1994, but it was denied by the municipality in December 1995.⁴⁰⁹ By March 1995, construction of the landfill facility at the site had been completed. In November 1995, Metalclad entered into an agreement (*convenio*) with two sub-agencies of the Secretariat of the Environment of the Mexican government, permitting operation of the landfill for an initial period of five years.⁴¹⁰ In February 1996, the federal authorities issued a further permit to COTERIN increasing the annual permitted capacity of the facility from 36,000 tonnes to 360,000 tonnes. In April 1996, the municipality rejected a renewed application for a construction permit. The refusal was challenged in the Mexican federal court, but was dismissed on the ground that COTERIN had not exhausted its administrative remedies. An appeal to the Mexican Supreme Court was subsequently abandoned. In October 1996, Metalclad initiated NAFTA arbitration proceedings, alleging breaches of Articles 1105 and 1110 of NAFTA. On 20 September 1997, the governor of the state of San Luis Potosi issued an ecological decree declaring an area of 188,758 hectares within the municipality, including the site, to be an ecological preserve for the protection of cacti.

The arbitral tribunal found that Mexico could be internationally responsible for the acts of the municipality and the state of San Luis Potosi.⁴¹¹ As to Article 1105, it found that Mexico had not treated Metalclad fairly and equitably, having regard to the requirements of transparency

⁴⁰⁸ In the arbitration proceedings, Metalclad alleged, and the tribunal found, that Mexican federal officials had assured Metalclad that COTERIN had all the authorisations required to undertake the landfill project.

⁴⁰⁹ The municipality denied the application on the grounds, inter alia, that: (1) COTERIN had been denied a construction permit in 1991; (2) COTERIN had commenced construction before applying for the permit and finished the construction while the permit application was pending; (3) there were environmental concerns; and (4) a great number of the municipality's inhabitants were opposed to the granting of the permit.

⁴¹⁰ The municipality challenged the *convenio*, by means of administrative complaint to the federal Secretariat of the Environment and by filing a writ of *amparo* with the Federal Court in January 1996. In the *amparo* proceedings, the municipality obtained an injunction in respect of the *convenio* in February 1996, but the *amparo* proceedings were dismissed in May 1999.

⁴¹¹ Award, 25 August 2000, 40 ILM 35 (2001), para. 73.

imposed by Articles 102 and 1802 of NAFTA. The tribunal ruled that the denial of the construction permit by the municipality – by reference to environmental impact and other considerations – was improper, since the federal authority’s jurisdiction was controlling and the authority of the municipality extended only to ‘appropriate construction considerations’.⁴¹² It found that Mexico had failed to ensure the transparent and predictable framework for Metalclad’s investment, and that the lack of orderly process and timely disposition was inconsistent with the investor’s expectation that it would be treated fairly and justly.⁴¹³ With regard to Article 1110, the tribunal ruled that Mexico had indirectly expropriated Metalclad’s investment:

By permitting or tolerating the conduct of Guadalcázar in relation to Metalclad which the Tribunal has already held amounts to unfair and inequitable treatment breaching Article 1105 and by thus participating or acquiescing in the denial to Metalclad of the right to operate the landfill, notwithstanding the fact that the project was fully approved and endorsed by the federal government, Mexico must be held to have taken a measure tantamount to expropriation in violation of NAFTA Article 1110(1) . . . [The municipality’s denial of a construction permit], taken together with the representations of the Mexican federal government, on which Metalclad relied, and the absence of a timely, orderly or substantive basis for the denial by the Municipality of the local construction permit, amount to an indirect expropriation.⁴¹⁴

For good measure, the tribunal added:

Although not strictly necessary for its conclusion, the Tribunal also identifies as a further ground for a finding of expropriation the Ecological Decree issued by the Governor of [San Luis Potosí] on September 20, 1997. The Decree covers an area of 188,758 hectares within the ‘Real de Guadalcázar’ that includes the landfill site, and created therein an ecological preserve. This Decree had the effect of barring forever the operation of the landfill . . . The Tribunal need not decide or consider the motivation or intent of the adoption of the Ecological Decree. Indeed, a finding of expropriation on the basis of the Ecological Decree is not essential to the Tribunal’s finding of a violation of NAFTA Article 1110. However, the Tribunal considers that the implementation of the Ecological Decree would, in and of itself, constitute an act tantamount to expropriation.⁴¹⁵

The tribunal awarded Metalclad \$16.685 million USD in damages. Mexico challenged the award before the Supreme Court of British Columbia (which had jurisdiction on the basis that

⁴¹² Paras. 86–97; the conclusion was not affected by Art. 1114 of NAFTA (para. 98). ⁴¹³ Para. 99.

⁴¹⁴ Paras. 104 and 107. In reaching this conclusion, the tribunal relied on a generous, broad and unprecedented definition of expropriation: ‘expropriation under NAFTA includes not only open, deliberate and acknowledged takings of property, such as outright seizure or formal or obligatory transfer of title in favour of the host state, but also covert or incidental interference with the use of property which has the effect of depriving the owner, in whole or in significant part, of the use or reasonably to-be-expected economic benefit of property even if not necessarily to the obvious benefit of the host state’ (para. 103).

⁴¹⁵ Paras. 109 and 111. In reaching this conclusion, the tribunal appears to have relied on the Decree’s ninth Article (forbidding ‘any work inconsistent with the Ecological Decree’s management programme’); the fourteenth Article (forbidding ‘any conduct that might involve the discharge of polluting agents on the reserve soil, subsoil, running water or water deposits and prohibit[ing] the undertaking of any potentially polluting activities’); and the fifteenth Article (forbidding ‘any activity requiring permits or licences unless such activity is related to the exploration, extraction or utilisation of natural resources’). It does not appear from the award that the tribunal had regard to any evidence as to whether the Ecological Decree did in fact ‘bar forever’ the operation of the landfill site.

Vancouver, British Columbia, had been the place of arbitration and on British Columbia's International Arbitration Act 1996). The Supreme Court annulled that part of the award relating to Article 1105, on the ground that by incorporating principles and obligations concerning transparency under Chapter 18 into Article 1105, the tribunal had made a decision which went beyond the scope of the submission to arbitration (limited to Chapter 11).⁴¹⁶ The Supreme Court found that the tribunal's analysis of Article 1105 infected its analysis of Article 1110, so that by relying on transparency to conclude that there had been an expropriation the tribunal had also gone beyond the scope of the submission to arbitration.⁴¹⁷ The Supreme Court did not, however, consider that the tribunal's decision on the effects of the 1997 Ecological Decree had been infected by its analysis of Article 1105. It noted that the tribunal had given 'an extremely broad definition of expropriation for the purposes of Article 1110', but that the definition of expropriation was a question of law which the Supreme Court was not entitled to interfere with under section 34 of the International Commercial Arbitration Act, from which it derived its jurisdiction, and concluded that any error by the tribunal in relation to its decision on the Ecological Decree was not 'patently unreasonable'.⁴¹⁸ Consequently, that part of the arbitral award was upheld.

The broad definition of expropriation applied by the *Metalclad* arbitral tribunal has not been utilised or adopted in other awards.⁴¹⁹ In addition, the tribunal's finding that it need not consider the motive or intent behind the Ecological Decree places the *Metalclad* decision at odds with subsequent decisions of NAFTA tribunals. In *Methanex v. United States*,⁴²⁰ a Canadian investor brought proceedings challenging Californian legislation restricting the use of MTBE, a methanol-based source of octane and oxygenate for gasoline, on the grounds that it 'presents a significant risk to the environment' by contaminating drinking water. Methanex claimed that the Californian legislation was discriminatory, arbitrary and went beyond what was necessary to protect a legitimate public interest, violating Articles 1102, 1105 and 1110 of NAFTA.

Methanex's discrimination claim alleged that the Californian ban on MTBE was intended to favour domestic ethanol producers and to harm producers of methanol. The tribunal adopted a twofold test for breach of the national treatment provision in Article 1102: Methanex would have to demonstrate: (1) that California intended to favour domestic investors by discriminating against foreign investors; and (2) that Methanex and the domestic investor were in like circumstances.⁴²¹ This claim failed, on the ground that the measures taken by California did not discriminate between foreign investors and MTBE producers in California.⁴²² The Article 1105 claim was rejected on the ground that the provision did not preclude differentiation between nationals and aliens.⁴²³ In relation to Article 1110, Methanex claimed that the Californian legislation would end sales of methanol for use in MTBE in California and contribute to an

⁴¹⁶ 2 May 2001, [2001] *British Columbia Trial Cases* 664; 5 ICSID Repts 236, paras. 68–76. ⁴¹⁷ Paras. 77–80.

⁴¹⁸ Paras. 99–103.

⁴¹⁹ Awards finding no violation of Art. 1110 include: *S. D. Myers Inc. v. Canada* (see n. 399); *Pope and Talbot v. Canada*, Interim Merits Award, 26 June 2000, paras. 96–105 (the test is whether the interference is sufficiently restrictive to support a conclusion that the property has been 'taken' from the 'owner' (para. 102)); *Marvin Feldman v. Mexico*, Award, 9 December 2002, paras. 96ff. (noting that 'the ways in which governmental authorities may force a company out of business, or significantly reduce the economic benefits of its business, are many . . . At the same time, governments must be free to act in the broader public interest through protection of the environment . . . imposition of zoning restrictions and the like' (para. 103)).

⁴²⁰ Final Award, 3 August 2005 (<http://ita.law.uvic.ca/documents/MethanexFinalAward.pdf>).

⁴²¹ Final Award, Part IV, Chapter B, para. 12. ⁴²² *Ibid.*, Chapter B, paras. 21 and 22.

⁴²³ *Ibid.*, Chapter C, para. 14.

extended closure of a plant, which was a prohibited measure 'tantamount . . . to expropriation'. The tribunal rejected Methanex's claim under Article 1110, on the ground that the measure was a non-discriminatory regulation for a *public purpose* that was enacted in accordance with due process, and it had not been shown that specific commitments were given by the regulating government that it would refrain from such regulation.⁴²⁴ In reaching its decision, the tribunal noted that:

Methanex entered a political economy in which it was widely known, if not notorious, that governmental environmental and health protection institutions at the federal and state level, operating under the vigilant eyes of the media, interested corporations, non-governmental organizations and a politically active electorate, continuously monitored the use and impact of chemical compounds and commonly prohibited or restricted the use of some of those compounds for environmental and/or health reasons.⁴²⁵

In reaching this conclusion, the tribunal noted that the scientific evidence supporting the ban of MTBE was sound and the ban was not intended to harm a foreign investor since it was enacted

with a view to protecting the environmental interests of the citizens of California, and not with the intent to harm foreign methanol producers. Faced with widespread and potentially serious MTBE contamination of its water resources, California ordered a careful assessment of the problem and thereafter responded reasonably to independent findings that large volumes of the state's ground and surface water had become polluted by MTBE and that preventative measures were called for. The evidential record establishes no ill will towards Methanex or methanol.⁴²⁶

The finding of the tribunal in *Methanex* places it in conflict with *Metalclad*. The two cases occupy extreme ends of the spectrum when it comes to considering whether an environmental measure (or any other regulatory measure, for that matter) will constitute a measure tantamount to expropriation within the meaning of Article 1110 of NAFTA, or whether the measure constitutes a legitimate regulatory measure which falls outside the protections in Article 1110. At one end of the spectrum, there is a line of investment treaty case law (which includes *Metalclad*), which suggests that arbitral tribunals may disregard the intentions (environmental or otherwise) behind the measures. This is demonstrated by the following passage in the *Tecmed* case, in which the tribunal found

no principle stating that regulatory administrative actions are per se excluded from the scope of the [applicable BIT], even if they are beneficial to society as a whole – such as environmental protection – particularly if the negative economic impact of such actions on the financial position of the investor is sufficient to neutralize in full the value, or economic or commercial use of its investment without receiving any compensation whatsoever.⁴²⁷

⁴²⁴ *Ibid.*, Chapter D, para. 7. ⁴²⁵ *Ibid.*, Chapter D, para. 9. ⁴²⁶ *Ibid.*, Chapter E, para. 20.

⁴²⁷ *Tecnicas Medioambientales Tecmed SA v. United Mexican States*, ARB(AF)/00/2, Award, 29 May 2003, 43 ILM 133 (2004), para. 121.

At the other end lie decisions such as *Methanex*, which exclude non-discriminatory, regulatory measures from the scope of indirect expropriation. The *Methanex* reasoning was followed by an UNCITRAL tribunal in the *Saluka* award, where the tribunal held that:

the principle that a State does not commit an expropriation and is thus not liable to pay compensation to a dispossessed alien investor when it adopts general regulations that are 'commonly accepted as within the police powers of States' forms part of customary international law today.⁴²⁸

Following this last approach, the permissibility of the measure adopted will determine whether the measure will be deemed expropriatory or permissible and thus not requiring compensation. The key issue here is being able to identify the delimitation between indirect expropriation and legitimate regulatory action which does not give rise to compensation – in *Metalclad*, the tribunal considered the environmental measure to amount to indirect expropriation whereas the tribunal in *Methanex* considered that the measure adopted fell outside the scope of Article 1110 of NAFTA since it was for a public purpose. However, investment dispute case law does not offer a generally applicable test to determine between the two. In *Saluka*, the tribunal considered that:

international law has yet to identify in a comprehensive and definitive fashion precisely what regulations are considered 'permissible' and 'commonly accepted' as falling within the police or regulatory power of States and thus, non-compensable. In other words, it has yet to draw a bright and easily distinguishable line between non-compensable regulations on the one hand and, on the other, measures that have the effect of depriving foreign investors of their investment and are thus unlawful and compensable in international law.⁴²⁹

As a result, the determination is left for the tribunal to decide on a case-by-case basis. While this is not a satisfactory position for the foreign investor to be in, it does demonstrate that this is an area of international law where the parties' choice of arbitrator (and that arbitrator's views on the law relating to expropriation) is of vital importance. In addition, it should be noted that the approach adopted in *Methanex* has not been without controversy. As one commentator notes:

It is too early to say whether legitimate regulatory purposes will in the future serve as an easily available escape from a potential finding of regulatory expropriation. It should be noted, however, that some investment tribunals have voiced concern over the appropriateness of a public purpose as a (sole) criterion to remove government action from the scope of indirect expropriation. For instance, the ICSID tribunal in the *Azurix* case, without openly referring to *Methanex* or *Saluka*, found that 'the issue was not so much whether the measure concerned is legitimate and serves a public purpose, but whether it is a measure that, being legitimate and serving a public purpose, should give rise to a compensation claim'.⁴³⁰

⁴²⁸ *Saluka Investments BV (the Netherlands) v. Czech Republic*, UNCITRAL Partial Award, 17 March 2006, para. 262 (<http://ita.law.uvic.ca/documents/Saluka-PartialawardFinal.pdf>).

⁴²⁹ *Ibid.*, para. 263.

⁴³⁰ A. Reinisch, 'Expropriation', in P. Muchlinski, F. Ortino and C. Schreuer (eds.), *The Oxford Handbook of International Investment Law* (Oxford: Oxford University Press, 2008), ch. 11, 437–8.

The *Methanex* case is important for another reason: it made a significant contribution to the participation rights of non-state actors. In January 2001, the tribunal ruled that it had the power pursuant to Article 15(1) of the UNCITRAL rules (governing the proceedings) to accept *amicus* written submissions from the International Institute of Sustainable Development (IISD) and a number of other non-governmental organisations.⁴³¹ This appears to have been the first time that the possibility of an *amicus* submission was recognised in international arbitral proceedings. In its Final Award, the tribunal referred to arguments made by IISD in relation to *Methanex*'s claim under Article 1102.

The issue of whether environmental measures adopted (again by California) amounted to unfair treatment or were tantamount to expropriation in violation of Articles 1105 and 1110 of NAFTA arose in *Glamis Gold Ltd v. United States*.⁴³² *Glamis* was a Canadian company that had been granted mining rights for gold in south-eastern California, near a Native American cultural site. Subsequent to the grant of mining rights, the California legislature enacted measures that would have required *Glamis* to backfill all excavations. The purpose of these measures was, inter alia, to protect Native American sacred sites from the adverse environmental effects of the proposed mining operations, and to prevent irreparable damage to sites sacred to the Quechan Indian Tribe.⁴³³ *Glamis* claimed that the measures violated the obligations of the United States to provide fair and equitable treatment pursuant to Article 1105 of NAFTA on the grounds that they unfairly targeted the area in which *Glamis* was operating, denied *Glamis* a transparent and predictable legal framework within which to operate, and were arbitrary in not protecting cultural resources and possibly contributing to environmental degradation. Applying a standard under customary international law, the tribunal concluded that the obligation to afford 'fair and equitable treatment' would be violated only by an act that is:

sufficiently egregious and shocking – a gross denial of justice, manifest arbitrariness, blatant unfairness, a complete lack of due process, evident discrimination, or a manifest lack of reasons – so as to fall below accepted international standards and constitute a breach of Article 1105. Such a breach may be exhibited by a 'gross denial of justice or manifest arbitrariness falling below acceptable international standards'; or the creation by the State of objective expectations in order to induce investment and the subsequent repudiation of those expectations.⁴³⁴

The tribunal ruled that California's measures did not violate Article 1105. In relation to the cultural and environmental reasons behind the measures, the tribunal found that *Glamis* had not proved that the objective of the measures was not rationally related to the measures themselves.⁴³⁵ The tribunal rejected *Glamis*'s claim under Article 1110 of NAFTA, on the ground that the measures did not 'cause a sufficient economic effect' on *Glamis*'s mining rights.⁴³⁶

The *Glamis* decision can be contrasted with the more recent ruling of a PCA arbitral tribunal in the *Bilcon* case.⁴³⁷ The core claim of investors in the *Bilcon* case related to a decision of provincial and federal authorities in Canada to reject the investors' proposal for a quarry and

⁴³¹ Order, 15 January 2001 (www.state.gov/documents/organization/6039.pdf).

⁴³² *Glamis Gold Ltd v. United States*, Award, NAFTA Chapter 11 Arbitral Tribunal, 8 June 2009. ⁴³³ Para. 174.

⁴³⁴ Para. 627. ⁴³⁵ Paras. 803 and 818. ⁴³⁶ Para. 536.

⁴³⁷ *The Claytons and Bilcon Inc v. Canada*, Award on Jurisdiction and Liability, 17 March 2015, Permanent Court of Arbitration Case No. 2009-04, at www.italaw.com/sites/default/files/case-documents/italaw4212.pdf (*Bilcon*).

marine terminal at Whites' Point in Nova Scotia. The focus of the investors' challenge was the environmental assessment process conducted under provincial and federal law, which relied on recommendations of a specially constituted Joint Review Panel (JRP). A key aspect of the JRP report and its recommended rejection of the project was the Panel's reliance on the project's conflict with 'community core values', which the Tribunal understood as a combination of majority public opinion on the project, values enshrined in planning documents, local self-determination in planning matters, and inconsistencies with 'community DNA'.⁴³⁸

In the Tribunal's view, 'the "community core values" approach by the JRP . . . was at the very least a highly problematic basis' for the Panel to base its recommendations upon.⁴³⁹ Indeed, the Tribunal commented that the 'community core values' approach did not itself warrant a finding of 'likely significant adverse effects on the environment after mitigation', the standard referred to under relevant Canadian environmental assessment laws.⁴⁴⁰ According to the Tribunal, the decision of the JRP was in effect a 'zoning decision' that found the area concerned to be a 'no go' zone for projects of the kind proposed rather than including, at least as a major part of the process, a 'proper assessment' of the likely significant effects of the project on the environment and means for mitigating them.⁴⁴¹ The Tribunal concluded on this basis that the approach to the environmental assessment adopted by the JRP and Canada breached the minimum standard of treatment guaranteed by Article 1105 of NAFTA.⁴⁴²

The Tribunal's findings on Article 1105, and its interpretation of 'community core values', were strongly disputed in the dissenting opinion issued by Professor Donald McRae.⁴⁴³ Professor McRae, engaging more closely with the JRP report than the majority, saw the Panel's references to core values as part of its assessment of the socio-economic impacts of the project on the human environment, an element of the analysis that was within the remit of its authority. He warned that the majority's approach had the potential to impose 'a chill' on environmental review panels 'which will be concerned not to give too much weight to socio-economic considerations or other considerations of the human environment in case the result is a claim for damages under NAFTA Chapter 11'.⁴⁴⁴ Rather than a 'problematic' approach to environmental assessment, Professor McRae noted:

In this day and age, the idea of an environmental review panel putting more weight on the human environment and on community values than on scientific and technical feasibility, and concluding that these community values were not outweighed by what the panel regarded as modest economic benefits over 50 years, does not appear at all unusual.⁴⁴⁵

He concluded that the majority decision was 'a remarkable step backwards in environmental protection'.⁴⁴⁶

⁴³⁸ *Bilcon*, paras. 502–4ff. The investors also raised arguments with respect to misapplication of the precautionary principle and the assessment of cumulative impacts but these points were not specifically reached by the Tribunal in its decision (paras. 728–30).

⁴³⁹ *Ibid.*, para. 534. ⁴⁴⁰ *Ibid.*, para. 535. ⁴⁴¹ *Ibid.*, paras. 454, 592, 740. ⁴⁴² *Ibid.*, para. 604.

⁴⁴³ *The Claytons and Bilcon Inc v. Canada*, Dissenting Opinion of Professor Donald McRae, available at www.pca-cpa.org/Dissenting%20Opinion%20of%20Professor%20Donald%20McRae956b.pdf?fil_id=2905

⁴⁴⁴ *Ibid.*, at para. 51. ⁴⁴⁵ *Ibid.* ⁴⁴⁶ *Ibid.*

Beyond the NAFTA system, in *Compania del Desarrollo de Santa Elena SA v. Costa Rica*, an ICSID tribunal applying a Costa Rica–US bilateral investment treaty had to determine the amount of compensation to be paid to the investor for the expropriation of its property in Costa Rica. The property in question had been acquired in 1973 for the purpose of building a tourist resort, and comprised tropical dry forest that was ‘home to a dazzling variety of flora and fauna’ and located next to the Santa Rosa National Park.⁴⁴⁷ The property was expropriated in 1978 for the purpose of adding to the area of the Santa Rosa National Park and to conserve flora and fauna, including the protection of jaguars, pumas and sea turtles.

The parties were not in dispute that the object of the expropriation was lawful and for a public purpose, namely to protect biodiversity; they disagreed as to the amount of compensation to be paid. In presenting its claim, Costa Rica invited the tribunal to have regard to the environmental objectives of the expropriation, and the concern that setting too high an amount would provide a disincentive for states, in particular developing states, to adopt legitimate environmental objectives such as the establishment and extension of national parks. Costa Rica also claimed that its expropriation was taken pursuant to and in accordance with its obligations under various international environmental agreements, including the 1940 Western Hemisphere Convention.⁴⁴⁸ The tribunal did not accept that the standard of compensation (applying the principle of full compensation for fair market value) could be affected by environmental considerations. It ruled:

While an expropriation or taking for environmental reasons may be classified as a taking for a public purpose, and thus may be legitimate, the fact that the Property was taken for this reason does not affect either the nature or the measure of the compensation to be paid for the taking. That is, the purpose of protecting the environment for which the Property was taken does not alter the legal character of the taking for which adequate compensation must be paid. The international source of the obligation to protect the environment makes no difference. Expropriatory environmental measures – no matter how laudable and beneficial to society as a whole – are, in this respect, similar to any other expropriatory measures that a state may take in order to implement its policies: where property is expropriated, even for environmental purposes, whether domestic or international, the state’s obligation to pay compensation remains.⁴⁴⁹

The tribunal accordingly declined to analyse the detailed evidence regarding what Costa Rica referred to as ‘its international legal obligation to preserve the unique ecological site that is the Santa Elena property’.⁴⁵⁰

In *Parkerings-Compagniet AS v. Republic of Lithuania*,⁴⁵¹ an ICSID tribunal applying a bilateral investment treaty between Lithuania and Norway had to decide whether differentiation between a Norwegian investor and a Dutch investor in relation to matters of environmental protection violated Article IV(1) of the treaty, that provided for most-favoured-nation

⁴⁴⁷ Award of 17 February 2000, 39 ILM 1317 (2000), paras. 15–18.

⁴⁴⁸ On the 1940 Convention, see Chapter 10, p. 441.

⁴⁴⁹ Award of 17 February 2000, 39 ILM 1317 (2000), paras. 71–2. ⁴⁵⁰ *Ibid.*

⁴⁵¹ ICSID Case No. ARB/05/8, Award, 11 September 2007.

treatment.⁴⁵² The tribunal ruled that the two foreign projects were not in *like circumstances*, because the archaeological and environmental impacts of the two projects were different. The tribunal concluded that:

the refusal . . . to authorize [the Norwegian investor's] project in Gedimino was justified by various concerns, especially in terms of historical and archaeological preservation and environmental protection. These concerns are peculiar to the extension of [the Norwegian investor's] project in the Old Town and thus could justify different treatment with [the Dutch investor].⁴⁵³

Finally, in the first ICSID case applying the Energy Charter Treaty at the merits stage, the tribunal in *Plama Consortium Ltd v. Republic of Bulgaria* had to consider whether a change in Bulgarian environmental laws (that excluded state liability for past environmental damage) violated Article 10(1) of the Energy Charter Treaty on the ground that the amended law violated provisions relating to fair and equitable treatment.⁴⁵⁴ The tribunal found that the claim was inadmissible because the investment violated Bulgarian domestic law. It nevertheless considered each of Plama's substantive claims, concluding that they would have all failed even if the claim had been validly brought. The tribunal dismissed the claims based on the fair and equitable treatment standard, noting that:

The [Energy Charter Treaty] does not protect investors against any and all changes in the host country's laws. Under the fair and equitable treatment standard the investor is only protected if (at least) reasonable and justifiable expectations were created in that regard. It does not appear that Bulgaria made any promises or other representations to freeze its legislation on environmental law to the Claimant or at all.⁴⁵⁵

Whereas dispute settlement in the WTO setting has achieved a now relatively settled approach to the relationship between trade and environmental rules, the diversity of arbitral options available to resolve international investment disputes involving environmental measures has resulted in a piecemeal approach with often conflicting decisions. This has led to calls for a more centralised approach to investment dispute settlement, such as the EU Commission's proposal for an 'investment court system' as part of the Transatlantic Trade and Investment Partnership under negotiation between the EU and the United States.⁴⁵⁶ In the absence of a more 'multilateralised' approach to settlement of environment-related investor arbitral disputes that might parallel processes developed in the WTO, parties' choice of arbitrators – as indicated above – is likely to remain critical to the outcome of particular disputes.

⁴⁵² Agreement Between the Government of the Kingdom of Norway and the Government of the Republic of Lithuania on the Promotion and Mutual Protection of Investments, 16 August 1992, Art. IV(1).

⁴⁵³ *Parkerings-Compagniet AS v. Republic of Lithuania*, ICSID Case No. ARB/05/8, Award, 11 September 2007, para. 396.

⁴⁵⁴ ICSID Case No. ARB/03/24, Award, 27 August 2008. ⁴⁵⁵ Para. 219.

⁴⁵⁶ S. W. Schill, 'The European Commission's Proposal of an "Investment Court System" for TTIP: Stepping Stone or Stumbling Block for Multilateralizing International Investment Law?', 20(9) *ASIL Insights* (2016), available at www.asil.org/insights/volume/20/issue/9/european-commissions-proposal-investment-court-system-ttip-stepping. The fate of the TTIP is uncertain under the US administration of President Trump.

Insurance

With a view to encouraging direct foreign investment, various national and international governmental arrangements have been established to insure foreign investors (and provide other guarantees) against certain risks that may befall their investments. The approach of the Multilateral Investment Guarantee Agency (MIGA) draws upon that applied at the national level, including in particular the approach of the United States' Overseas Private Investment Corporation.⁴⁵⁷

Increasingly, such arrangements require prior environmental assessment of the project in order to ensure that financial support is not provided to projects that are harmful to the environment.

The leading international scheme is that provided by MIGA, which is part of the World Bank family.⁴⁵⁸ MIGA provides investment guarantees against certain non-commercial risks (i.e. political risk insurance) to eligible foreign investors for qualifying investments in developing member countries. MIGA's coverage is against the following risks: transfer restrictions, expropriation, breach of contract, non-honouring of financial obligations, and war, terrorism and civil disturbance. MIGA has a policy on environmental and social sustainability, which requires environmental assessment of proposed projects to help ensure that it provides guarantees only to projects that are environmentally sound and sustainable.⁴⁵⁹ Under this policy it also applies various other environmental and social performance standards – similar to the World Bank's Operational Policies – in reviewing projects under consideration for political risk insurance from MIGA.⁴⁶⁰

INTELLECTUAL PROPERTY RIGHTS

In Chapter 15 we dealt with aspects of the interaction of intellectual property rights with the environment, focusing on the extent to which such rights may limit scope for the dissemination of environmentally beneficial technologies. Intellectual property rights, such as patents, are often regarded as an engine of economic growth that can facilitate technological development. However, where technologies may have detrimental effects for health or the environment questions arise as to the extent to which such concerns may limit or prevent the grant of patent or other intellectual property rights. Similar issues may arise where intellectual property rights are sought with respect to technology development that harnesses traditional knowledge of biodiversity resources. Both aspects of the intellectual property–environment relationship are discussed below.

⁴⁵⁷ For details of the United States' Overseas Private Investment Corporation (OPIC), see www.opic.gov

⁴⁵⁸ www.miga.org

⁴⁵⁹ MIGA, Policy on Environmental and Social Sustainability', 1 October 2013, www.miga.org/documents/Policy_Environmental_Social_Sustainability.pdf. The Policy is effective for all investment guarantees initiated after 1 October 2013. The previous 2007 policy applies to investment guarantees issued between October 2007 and October 2013.

⁴⁶⁰ On the World Bank's environmentally related operational policies, see Chapter 14, pp. 675–6. MIGA applies performance standards in relation to: assessment and management of environmental and social risks and impacts; labour and working conditions; resource efficiency and pollution prevention; community health, safety and security; land acquisition and involuntary resettlement; biodiversity conservation and sustainable natural resource management; indigenous peoples; and cultural heritage.

Patents and Other Rights⁴⁶¹

A central issue raised by intellectual property rights in the context of international environmental law concerns the extent to which environmental considerations may limit or prevent the grant of patent (or other intellectual property rights) to products which may have adverse consequences for the environment. The 1973 European Patent Convention (establishing the European Patent Office (EPO)) provides that European patents will not be granted for inventions the commercial exploitation of which would be contrary to *ordre public* or morality, provided that the exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation in some or all of the parties.⁴⁶² It also prohibits the grant of patents in respect of 'plant or animal varieties or essentially biological processes for the production of plants or animals'.⁴⁶³ The jurisdiction to refuse patent protection for environmentally damaging technologies as contrary to *ordre public* also receives indirect support from the Opinion of Advocate General Jacobs, in a case challenging the validity of the Biotechnology Directive (see below). He said:

Preservation of the environment must be regarded in the present state of Community law as one of the fundamental interests of society. That was recognised by the Court as long ago as 1988 in *Commission v. Denmark* . . . and is now enshrined in Article 2 of the Treaty which includes the promotion of 'a high level of protection and improvement of the quality of the environment' among the Community's tasks. The 'fundamental interests of society' referred to by the Court in *Bouchereau* . . . must to my mind now be understood as extending to the environment. A genuine and sufficiently serious threat to the environment would thus fall squarely within the concept of *ordre public*.⁴⁶⁴

The case law relating to Article 53 of the 1973 European Patent Convention illustrates the circumstances in which there may exist a certain tension between the grant of patents and the protection of the environment. In *Lubrizol Genetics Inc.*, objections were made to the grant of a patent on the ground, among others, that such a grant would lead to a loss of biodiversity. The EPO stated that environmental arguments could be addressed within the *ordre public/morality* exception, and decided that a 'fair test to apply is to consider whether it is probable that the public in general would regard the invention as so abhorrent that the grant of a patent right would be inconceivable', noting that Article 53(a) was 'likely to be invoked only in rare and extreme cases'.⁴⁶⁵ On the facts, the EPO rejected the challenge, noting in respect to the loss of biodiversity argument that biotechnology increased genetic diversity by increasing new plant varieties, that traditional breeding techniques could also result in loss of biodiversity, and that biotechnology should not be singled out among various factors causing loss of biodiversity. The

⁴⁶¹ For an excellent review of the issues, see UK Department for International Development, *Integrating Intellectual Property Rights and Development Policy: Report of the Commission on Intellectual Property Rights* (2002).

⁴⁶² European Patent Convention, Art. 53(a). This formulation is the outcome of amendments to Art. 53(a) made as part of the 2000 revisions to the European Patent Convention, which came into force in 2007. The revisions were made to bring the Convention into line with Art. 27(2) of the WTO TRIPs Agreement and Art. 6(1) of the EU Biotechnology Directive 98/44/EC on the legal protection of biological inventions.

⁴⁶³ Art. 53(b). While an exception applies to the patentability of plant varieties, however produced, this does not exclude from patentability transgenic plants if specific plant varieties are not claimed: Enlarged Board Decision G1/98, OJ EPO 3/2000, 111. See also decisions of the Enlarged Board of Appeal G 2/12, G 2/13.

⁴⁶⁴ Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079.

⁴⁶⁵ Case T320/87, OJ EPO 1990, 71.

EPO also expressed the view that 'patent law is not an appropriate instrument for regulating the development of new technologies and that the legislature should determine whether a certain technology is so dangerous and unacceptable to the public that it should be suppressed'.⁴⁶⁶

In *Hormone Relaxin*, the test applied by the EPO in relation to the morality test was whether the grant of a patent for an invention 'would universally be regarded as outrageous', and noting that the existence of the then draft EU Biotechnology Directive indicated that the patenting of human gene sequences was not universally considered to be outrageous.⁴⁶⁷ That case was appealed to the EPO Technical Board of Appeal after the passing of the EU Biotechnology Directive 98/44/EC of 6 July 1998, and the earlier decision was upheld in light of the interpretation provided by the Directive of the concept of *ordre public*.⁴⁶⁸

In *Plant Genetic Systems*, Greenpeace challenged the grant of a patent in respect of an invention for developing plants and seeds resistant to certain types of herbicide, on the ground that such plants and seeds would be environmentally harmful. The EPO's Technical Board of Appeal confirmed that *ordre public* encompasses environmental protection and that 'inventions, the exploitation of which is not in conformity with the conventionally accepted standards of conduct pertaining to [the culture inherent in European society and civilisation] are to be excluded from patentability as being contrary to morality'.⁴⁶⁹ The Board of Appeal ruled that the revocation on environmental grounds of a patent under Article 53(a) of the 1973 Convention required the environmental hazards to be sufficiently substantiated, that the evidence submitted by Greenpeace demonstrated possible risk, but that it would not be possible to deny a patent 'on the basis of possible, yet not conclusively documented hazards'.⁴⁷⁰ The Board of Appeal also confirmed earlier case law to the effect that seeds and plants shall not per se constitute an exception to patentability on the ground that plant genetic resources should remain the 'common heritage of mankind'.⁴⁷¹

The *Oncomouse/Harvard* case attracted particular attention. The applicants sought the grant of a European patent for the US-patented Harvard oncomouse, the genetic make-up of which had been manipulated by the introduction of a single specified oncogene making it abnormally sensitive to carcinogenic substances and stimuli and, consequently, prone to develop tumours, which necessarily caused suffering. The patent was challenged on the grounds that it was incompatible with Article 53(a) of the 1973 Convention. On appeal, the Examining Division of the European Patent Office considered that the invention was not immoral or contrary to public order. The Examining Division held that each individual invention requires the question of morality to be examined, and that the possible detrimental effects and risks, including those of an environmental nature, had to be weighed and balanced against the merits and advantages.⁴⁷²

⁴⁶⁶ *Hybrid Plants/Lubrizol*, EPO Appeal Board Decision T 320/87, OJ EPO 1990, 71. ⁴⁶⁷ OJ EPO 1995/6, 388.

⁴⁶⁸ Case T272/95, 29 October 2002, 691.

⁴⁶⁹ Case T356/93, OJ EPO 1995/8, 545. On the compatibility with Art. 53(a) of inventions involving genetically modified herbicide-resistant plants, see also Case T745/01, 15 June 2004.

⁴⁷⁰ Para. 18.7. The Board also noted that it was for regulatory bodies and not the EPO to evaluate whether risks should lead to a prohibition in the patenting of an invention.

⁴⁷¹ Para. 18; on 'common heritage', see Chapter 6, p. 245.

⁴⁷² Decision of the Examining Division, 3 April 1992 (*Onco-mouse/Harvard*), Application No. 85 304 490.7, OJ EPO 1992, 589 at 591. The decision followed the ruling by the European Patent Convention Technical Board of Appeal in Decision T19/90 (*Re Harvard College (President and Fellows)*) that the danger of unforeseeable and irreversible effects following the release of genetically manipulated organisms into the environment was to be considered in applying Art. 53(a) (*European Patents Handbook* (1991), 103 (release 9): T 19/90-1); overruling the decision of first instance

Three different interests were involved and required balancing in deciding whether to grant a patent:

there is a basic interest of mankind to remedy widespread and dangerous diseases, on the other hand the environment has to be protected against the uncontrolled dissemination of unwanted genes and, moreover, cruelty to animals has to be avoided. The latter two aspects may well justify regarding an invention as immoral and therefore unacceptable unless the advantages, i.e. the benefit to mankind, outweigh the negative aspects.⁴⁷³

The Examining Division decided that the invention was useful to humankind, that it contributed to the reduction of the overall extent of animal suffering, and that animal test models were at present indispensable. As to 'possible risks to the environment', the Examining Division found that:

No release is intended into the general environment. Therefore the risk of an uncontrolled release is practically limited to intentional misuse or blatant ignorance on the part of the laboratory personnel carrying out the tests. The mere fact that such uncontrollable acts are conceivable cannot be a major determinant for deciding whether a patent should be granted or not. Exclusion of patentability cannot be justified merely because technology is dangerous.⁴⁷⁴

The grant was followed by renewed challenge, in proceedings that lasted several years and which were only concluded after the coming into force of the EU Biotechnology Directive. The final ruling in the case in 2004 by a technical board of appeal upheld the patent in amended form. The board found the relevant test to be applied required a 'careful weighing up' of the matters to be balanced, including balancing possible environmental risks against the usefulness of the invention to humankind.⁴⁷⁵ This test was said to allow clearly 'the scope or extent of, on the one hand, the animal suffering and/or environmental risk and, on the other hand, the usefulness to mankind to be considered'.⁴⁷⁶ In relation to environmental risks in the event of release or escape of modified oncomice, the board ruled:

the risk can only be regarded as minimally more than hypothetical when one considers the secure conditions under which laboratory mice are kept and the level of regulation of the use and keeping of animals for experimental purposes in most countries. Further, in the event of release or escape, it must be questionable whether oncomice would cause any damage, let alone any lasting damage, to the environment. The only perceivable threat is that, by mating with mice already in the wild, the oncogene would be spread. Against that, there must be the possibility that, because of their manipulated state, oncomice would not survive as long in the wild as non-manipulated mice.⁴⁷⁷

that patent law was not the right tool for regulating, inter alia, the problem of drastically disrupting evolution: *Onco-mouse*, Decision of 14 July 1989, OJ EPO 1989, 451 at 458-9.

⁴⁷³ Decision of the Examining Division, 3 April 1992 (*Onco-mouse/Harvard*), Application No. 85 304 490.7, OJ EPO 1992, 589 at 591-2.

⁴⁷⁴ *Ibid.*, 592-3 ⁴⁷⁵ Para. 10.5. ⁴⁷⁶ Para. 10.6. ⁴⁷⁷ Para. 13.2.9.

The cases indicate that, although it is possible to raise arguments against the grant of a patent based upon environmental grounds, the prospects of success are limited. The decisions indicate a tendency to focus on the environmental consequences flowing from the intended use, rather than the environmental consequences of misuse, whether accidental or otherwise. They also indicate a relatively high threshold of proof of environmental damage, in terms not dissimilar to the approach taken by the ICJ in the *Gabčíkovo–Nagymaros* and *Pulp Mills* cases. Further, no decision appears, thus far at least, to have invoked the precautionary principle (or approach), at least expressly. The EPO adjudicatory bodies have been careful to avoid establishing general rules of wholesale application, thus requiring each case to be dealt with on its own merits.

The 1973 Convention has been joined by a number of other international instruments since the first edition of this book appeared. It remains to be seen what their full influence might be on the EPO's approach, although their thrust is broadly neutral in seeking to achieve a balance between the protection of the environment, on the one hand, and of intellectual property rights, on the other.

At the global level, the 1994 WTO TRIPs Agreement establishes a regime requiring WTO members to make patents available for any inventions, whether products or processes, in all fields of technology without discrimination, subject to the normal tests of novelty, inventiveness and industrial applicability. It also requires that patents be available and patent rights be enjoyable without discrimination as to the place of invention and regardless of whether products are imported or locally produced.⁴⁷⁸ Like the 1973 European Patent Convention, the TRIPs Agreement allows exceptions to the general rule on patentability, of which two are environmentally relevant. The first is that patents should not be granted to inventions that are contrary to *ordre public* or morality (including inventions dangerous to human, animal or plant life or health or seriously prejudicial to the environment).⁴⁷⁹ The second exception is that members may exclude plants and animals other than micro-organisms and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes.⁴⁸⁰

Neither of these exceptions have yet been the subject of proceedings in an environmental case, but it is likely that the term *ordre public* would be held to mean the same in the TRIPs Agreement as in the 1973 European Patent Convention from which it derives.⁴⁸¹ If so, it will remain open to states bound by TRIPs to deny patent protection to environmentally damaging inventions.

A second important instrument is EU Directive 98/44/EC on the legal protection of biotechnological inventions, which commits member states to protecting biotechnological inventions under national patent law, without prejudice to their obligations under international agreements, in particular the TRIPs Agreement and the 1992 Biodiversity Convention.⁴⁸² The Directive, which took over a decade to legislate, and which seeks in part to clarify the application of the '*ordre public* and morality' exception in the 1973 European Patent Convention, provides that new inventions which are susceptible of industrial application are patentable 'even if they concern a

⁴⁷⁸ Art. 27(1).

⁴⁷⁹ Art. 27(2). The exception is subject to the condition that the commercial exploitation of the invention must also be prevented, and this prevention must be necessary for the protection of *ordre public* or morality.

⁴⁸⁰ Art. 27(3)(b). Any country excluding plant varieties from patent protection must, however, provide an effective *sui generis* system of protection.

⁴⁸¹ As to the meaning of which, see the Opinion of Advocate General Jacobs in Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079.

⁴⁸² OJ L213, 30 July 1998, 13, Art. 1.

product consisting of or containing biological material or a process by means of which biological material is produced, processed or used'.⁴⁸³ However, plant and animal varieties and 'essentially biological processes for the production of plants or animals' are not patentable unless, in respect of inventions that concern plants or animals, the technical feasibility of the invention is 'not confined to a particular plant or animal variety'.⁴⁸⁴ Inventions the commercial exploitation of which would be contrary to *ordre public* or morality remain unpatentable.⁴⁸⁵

The Netherlands challenged the legality of the Directive on the basis, among other grounds, that its provisions violated the TRIPs Agreement and the 1992 Biodiversity Convention. The ECJ ruled that Article 4 of the Directive did not violate Article 27(3)(b) of the TRIPs Agreement, which allows (but does not require) member states not to grant a patent for plants and animals other than micro-organisms.⁴⁸⁶ The Court also rejected the Dutch argument that the Directive's purpose – of making biotechnological inventions patentable in all the member states – was counter to the principle of equitable sharing of the benefits arising out of the utilisation of genetic resources, one of the objectives of the 1992 Biodiversity Convention. The Court ruled:

It cannot be assumed, in the absence of evidence, which is lacking in this case, that the mere protection of biotechnological inventions by patent would result, as is argued, in depriving developing countries of the ability to monitor their biological resources and to make use of their traditional knowledge, any more than it would result in promoting single-crop farming or in discouraging national and international efforts to preserve biodiversity.⁴⁸⁷

The Court also found that, while the Article 1 objective of the 1992 Convention is the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, the provision specifies that this must be done taking into account all rights over those resources and technologies. The Court identified no provision of the Convention which requires that 'the conditions for the grant of a patent for biotechnological inventions should include the consideration of the interests of the country from which the genetic resource originates or the existence of measures for transferring technology'.⁴⁸⁸ The Court's position would appear to be supported by the provisions of the 2010 Nagoya Protocol (discussed below), which does not purport to place limitations on the patentability of biotechnological applications. Article 4 of the Protocol states

⁴⁸³ Art. 3(1). Further, a 'biological material which is isolated from its natural environment or produced by means of a technical process may be the subject of an invention even if it previously occurred in nature' (Art. 3(2)).

⁴⁸⁴ Art. 4(1)(a) and (b) and (2). Inventions which concern 'a microbiological or other technical process or a product obtained by means of such a process' are patentable (Art. 4(3)).

⁴⁸⁵ Art. 6; for the view that *ordre public* encompassed the protection of the environment, see the Opinion of Advocate General Jacobs in Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079, paras. 108–9 (a 'genuine and sufficiently serious threat to the environment would thus fall squarely within the concept of *ordre public*').

⁴⁸⁶ Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079, paras. 57–8.

⁴⁸⁷ Para. 65.

⁴⁸⁸ Para. 66 (see also the Opinion of Advocate General Jacobs, noting that the Convention is 'in the nature of a framework agreement', that its 'suggested measures are rather varied and in most cases couched in general terms' and that 'nowhere does the Convention prohibit or restrict the patentability of biotechnological materials, or even of genetic resources' (Opinion, paras. 179 and 183)). The ECJ also rejected the argument that the Directive was an obstacle to international cooperation (para. 67).

that its provisions 'shall not affect the rights and obligations of any Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause serious damage or threat to biological diversity', although this 'is not intended to create a hierarchy between [the] Protocol and other international instruments'.⁴⁸⁹ Parties are also under an obligation to implement the Protocol 'in a mutually supportive manner' with other international instruments relevant to the Protocol.⁴⁹⁰

Traditional Knowledge⁴⁹¹

In the 1992 Biodiversity Convention the term 'traditional knowledge' refers to knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.⁴⁹² Traditional knowledge is usually orally transmitted and collectively owned, taking many forms including stories, songs, cultural rituals, customary laws and agricultural practices. It is broadly recognised that traditional knowledge possessed by indigenous and local communities may contribute to the conservation of the environment, biodiversity and sustainable agricultural practices.⁴⁹³ However, the international community has only recently begun to consider whether there is a need to take steps to protect such knowledge, and whether the existing system of intellectual property rights will suffice, or whether new forms of protection are required. Pursuant to Article 8(j) of the Biodiversity Convention, each contracting party is instructed,

[s]ubject to national legislation, [to] respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices.

In 1996, the Conference of the Parties to the 1992 Biodiversity Convention called for case studies on the impact of intellectual property rights on the achievement of the Convention's objectives, including relationships between such rights and the knowledge, practices and innovations of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.⁴⁹⁴ The Conference of the Parties also established a working group specifically to address the implementation of Article 8(j) and

⁴⁸⁹ Art. 4(1). ⁴⁹⁰ Art. 4(3).

⁴⁹¹ UK Department for International Development, *Integrating Intellectual Property Rights and Development Policy: Report of the Commission on Intellectual Property Rights* (2002), ch. 4.

⁴⁹² Art. 8(j).

⁴⁹³ C. Correa, *Traditional Knowledge and Intellectual Property* (Geneva: Quaker United Nations Office, 2001), cited in the report of the UK Department for International Development, *Integrating Intellectual Property Rights and Development Policy*. The author notes the other benefits which flow from such protection: the custodians of traditional knowledge could receive fair compensation if the traditional knowledge leads to commercial gain; the profile of the knowledge and the people entrusted with it may be raised, both within and outside their communities; it may prevent appropriation by unauthorised parties and may avoid 'biopiracy'; and may promote development.

⁴⁹⁴ Decision III/17 (1996), Preamble. See also Doha WTO Ministerial Declaration, para. 19 (2001); 1992 Biodiversity Convention Conference of the Parties Decision VI/10 (2002).

related provisions of the Convention. Decision VII/19 of the Conference of the Parties requested this working group to collaborate with the Ad Hoc Working Group on Access and Benefit-Sharing on an international instrument related to their areas of competence: these efforts gave rise to the Nagoya Protocol elaborating a regime for access to genetic resources and associated traditional knowledge and sharing of the benefits with countries of origin and their indigenous and local communities.⁴⁹⁵

In respect of traditional knowledge associated with genetic resources, parties to the Protocol are obliged to adopt measures to ensure that the benefits arising from utilisation of such knowledge are shared in a fair and equitable way, on mutually agreed terms, with the indigenous and local communities holding such knowledge.⁴⁹⁶ Parties are also required to ensure through domestic law that traditional knowledge is only accessed with the prior informed consent or approval and involvement of the indigenous or local communities concerned and that mutually agreed terms have been established.⁴⁹⁷ In implementing obligations under the Protocol, parties are required, in accordance with domestic law, to take into consideration indigenous and local communities' customary laws, community protocols and procedures with respect to traditional knowledge associated with genetic resources and to establish mechanisms, with the effective participation of such communities, to inform potential users of traditional knowledge about their obligations. Parties are further expected to support efforts by indigenous and local communities, including women in such communities, to develop: community protocols in relation to access and benefit sharing for traditional knowledge; minimum requirements for mutually agreed terms; and model contractual clauses for benefit sharing arrangements. That this may be quite demanding on the resources of indigenous and local communities is recognised by the Protocol's provisions on capacity-building, which include reference to special measures 'to increase the capacity of indigenous and local communities with emphasis on enhancing the capacity of women within those communities in relation to access to genetic resources and/or traditional knowledge associated with genetic resources'.⁴⁹⁸

The new provisions of the Nagoya Protocol complement the extensive work undertaken by other international organisations, such as UNCTAD and WIPO, in the field of traditional knowledge, to bring about some degree of international harmonisation of standards of protection in this area. Other relevant international developments include the introduction of farmers' rights into the FAO International Undertaking on Plant Genetic Resources and the 2001 Treaty,⁴⁹⁹ and recognition, in the 2007 UN Declaration on the Rights of Indigenous Peoples, of the right of indigenous peoples to maintain, control, protect and develop their traditional knowledge and intellectual property over such traditional knowledge.⁵⁰⁰ These efforts provide firm basis for the further development of international rules governing the protection of traditional knowledge, always recognising the tension between the objective of facilitating access to environmental benefits, on the one hand, and providing appropriate financial and other benefits to the holders of the knowledge, including through sharing of the monetary and other benefits of commercialisation.

⁴⁹⁵ Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, Nagoya, 29 October 2010, in force 12 October 2014, UNEP/CBD/COP/DEC/X/1. The Protocol currently has ninety-six parties. See further Chapter 10, pp. 403–4, and Chapter 15, pp. 725–6.

⁴⁹⁶ Art. 5(5).

⁴⁹⁷ Art. 7.

⁴⁹⁸ Art. 22(5)(j).

⁴⁹⁹ Art. 9.

⁵⁰⁰ UNGA Res. 61/L.67 (7 September 2007), Art. 31.

CONCLUSIONS

This chapter has canvassed three key areas of the growing intersection between international economic law and the environment. The most mature relationship in this regard is that between trade and the environment. As this chapter shows, a large body of international legislation and case law has developed as the international community has sought, at the regional and global levels, to find an acceptable balance between trade liberalisation objectives and environmental objectives. If anything, the legal situation has become increasingly complex. On the one hand, with the conclusion of the WTO Agreements, the international community furthered its efforts to liberalise and deregulate international trade;⁵⁰¹ on the other hand, it redoubled efforts to develop international environmental agreements, many of which rely upon trade sanctions to achieve their objectives or otherwise have the potential to conflict with trade requirements. These international initiatives have been accompanied by domestic legislation, mostly in industrialised countries, which tightens up national environmental regulations, including restrictions on imports. In the middle of these political and legal controversies, international courts and other bodies find themselves being called upon to adjudicate on the basis of bilateral, regional and global legal arrangements, and it is hardly surprising that they will apply different tests and reach different conclusions on the appropriate balance between environmental objectives and trade objectives. It is one of the ironies of the trade–environment tension that the free trade ideal based upon deregulation has required a new layer of international regulation to set minimum standards; the experience in each region and globally has been that free trade inevitably points to a degree of harmonisation of environmental standards, at least in the sense that minimum standards are to be met. The challenge for the international community is to ensure that those harmonised standards do not lead to a general weakening of environmental protection. In this regard, it is notable that many international environmental agreements explicitly recognise the right of a party to maintain more stringent standards, subject to certain requirements.⁵⁰²

While it can be argued that the GATT/WTO rules do not give adequate weight to the environment, the jurisprudence of, in particular, the WTO Appellate Body has significantly expanded the potential for the ‘environmental exceptions’ available under Article XX of the GATT. This development reflects recognition that legitimate environmental measures can, in certain circumstances, lawfully restrict international trade, provided that certain conditions are met. The international community faces two challenges here. One relates to standards, the other to institutions. With regard to standards, further efforts will be needed to refine and clarify (either through negotiations in the Doha Round or through practice) the emerging rules to assist governments, international organisations and adjudicative bodies to determine when environmental considerations can be allowed. In view of the approach taken by the Appellate Body, it may no longer be necessary to reconsider and modernise Article XX of the GATT, as the first edition of this book suggested. It is apparent that the WTO Appellate Body has been inspired by rules of international law arising outside the WTO, including the approach taken by the ECJ in the *Danish Bottles* and *Belgian Waste Disposal* cases, and reflected in Principle 12 of the Rio Declaration. With regard to institutions, significant advances have been made with the

⁵⁰¹ However, efforts to continue this process under the auspices of the Doha Declaration have not yet yielded substantive results.

⁵⁰² 1998 Chemicals Convention, Art. 15(4); 2000 Biosafety Protocol, Art. 2(4).

establishment of the WTO and the conclusion of agreements relating to SPS measures and technical barriers to trade. However, the concept of sustainable development (and its practical consequences) remains to be defined, and the relationship between international trade law and multilateral environmental agreements remains less certain than it should be. The level of controversy and debate stimulated by the Appellate Body's decisions in *Beef Hormones* and *Continued Suspension of Obligations*, together with the WTO Panel decision in *EC – Biotech*, suggests that the interaction of international trade obligations with domestic health and environmental standards will be a continuing frontier on which the 'trade and environment' battle is fought out over the course of the twenty-first century.

If the past two decades were about trade and environment, the next related international legal issue looming on the horizon is the relationship between competition law and the environment. It is likely that environmental arguments will increasingly be raised to justify commercial agreements that might otherwise be caught by antitrust laws. It is equally foreseeable that the law on subsidies and the environment will expand, and that environmental dumping (selling goods whose prices do not fully reflect their environmental costs and impacts) will be subject to international legal scrutiny. Disputes over renewable energy measures and biofuels look set to be at the forefront of legal developments in this area.

Another growing area concerns the intersection of international investment law with environmental protection. This field is constantly evolving but it is clear from the not altogether consistent jurisprudence that it is yet to find its centre of gravity. A number of broad conclusions may be drawn. First, it has been confirmed that national environmental regulations (and their application) are susceptible to challenge on the ground that they might interfere inappropriately with the property rights of foreign investors, either because they are expropriatory in character (where there is not a consistent line of case law), or because they fail to treat the foreign investor fairly, or they discriminate as between a domestic entity and a foreign investor. Second, it appears from the case law thus far that foreign investors may have a greater degree of protection than nationals, whose property is protected by human rights conventions.⁵⁰³ Too great a gulf between the two systems should be avoided. Third, in the one decided case on point there has been a reluctance to have regard to international environmental obligations in determining the level of compensation to be paid for a lawful expropriation: the *Santa Elena v. Costa Rica* decision does not indicate a willingness to address environment and development in an integrated manner, as the requirements of sustainable development require⁵⁰⁴ and as the jurisprudence of the WTO Appellate Body has done.⁵⁰⁵ Fourth, the cases indicate that the relationship between the protection of investments and the protection of the environment touches upon the delicate issue of subsidiarity or federalism, namely the level of government and decision-making at which environmental decisions (for example, on the siting of hazardous facilities or in relation to environmental assessment of projects) are to be taken.⁵⁰⁶ International adjudicators will need to be alert to the possibility of undermining support for foreign investment by inadvertently upsetting the delicate balance which many states have achieved, or are struggling with, in relation to this aspect.

⁵⁰³ See Chapter 17, pp. 819–23. ⁵⁰⁴ Chapter 6, pp. 217–29. ⁵⁰⁵ See pp. 854–71.

⁵⁰⁶ See, in this regard, the approach taken by the 1998 Aarhus Convention to rights of public participation in decision-making; Chapter 15, pp. 710–12.

Finally, in respect of intellectual property rights, which raise a variety of international legal issues of relevance to the environmental agenda, the challenge is to construct a system which can fulfil several environmental functions, including: to ensure that technologies or practices which are likely to lead to significant damage to the environment will not be granted protected status; and to allow the knowledge of indigenous peoples to be adequately protected. In respect of the first issue, systems developed under the EPO and WTO TRIPs Agreement seem to favour intellectual property protection for biotechnology and allow only limited exceptions to patentability based on environmental concerns. By contrast, the 2010 Nagoya Protocol and other developments regarding traditional knowledge signal increasing recognition of the need to safeguard traditional knowledge associated with the use of biodiversity, including through provisions for benefit sharing with communities possessing that knowledge.

A common theme that runs through these different facets of the relationship between international economic law and environmental protection are questions over how far environmental considerations can go in bringing about a restructuring of established international economic organisations, to what extent environment and development can (as a matter of law) be integrated, and whether it is the environment which will ultimately be subsumed into economic approaches, or whether it will be the other way round. The broad challenge for the next phase of this lively area of the law will be to achieve balance: between the domestic, the regional and the global; between the legitimate interests of economic actors and legitimate environmental and other social interests; and between the state and its constituent parts.⁵⁰⁷ What seems clear, however, is that it is at this interface between international environmental law and international economic law that the effectiveness of the standards that have been meticulously developed to protect flora, fauna and other environmental resources will increasingly be judged.

FURTHER READING

The relationship between environment and each of the areas of international economic law discussed in this chapter – trade, investment and intellectual property – is the subject of its own extensive literature, including numerous treatises. Below is a selection of some key resources concerning central aspects of the intersection of international economic law with environmental issues.

Trade and environment:

- S. J. Rubin and T. Graham, *Environment and Trade: The Relation of International Trade and Environmental Policy* (London: Pinter, 1982);
- E. Brown Weiss, 'Environment and Trade as Partners in Sustainable Development: A Commentary', 86 *American Journal of International Law* 700 (1992);
- P. Callas, D. Esty and D. Van Hoogstraten, 'Environmental Protection and International Trade: Toward Mutually Supportive Rules and Policies', 16 *Harvard Environmental Law Review* 271 (1992);
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- R. B. Stewart, 'International Trade and Environment: Lessons from the Federal Experience', 49 *Washington and Lee Law Review* 1329 (1992);
- S. Charnovitz, 'The Environment vs. Trade Rules: Defogging the Debate', 23 *Environmental Law* 475 (1993);

⁵⁰⁷ P. Sands, 'Searching for Balance', 11 *New York University Environmental Law Journal* 198 (2003).

- D. Esty, 'Beyond Rio: Trade and the Environment', 23 *Environmental Law* 387 (1993);
- J. Cameron, P. Demaret and D. Geradin (eds.), *Trade and Environment: The Search for Balance* (London: Cameron May, 1994);
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- A. Goyal, *The WTO and International Environmental Law* (New Delhi/Oxford: Oxford University Press, 2006);
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- A. Lindroos and M. Mehling, 'From Autonomy to Integration? International Law, Free Trade and the Environment', 77 *Nordic Journal of International Law* 253 (2008);
- T. Cottier, O. Nartova and S. Bigdeli (eds.), *International Trade Regulation and the Mitigation of Climate Change: World Trade Forum* (Cambridge: Cambridge University Press, 2009);
- E. Vranes, *Trade and the Environment: Fundamental Issues in International Law, WTO Law and Legal Theory* (Oxford: Oxford University Press, 2009);
- T. Epps and A. Green, *Reconciling Trade and Climate: How the WTO Can Help Address Climate Change* (Cheltenham, UK: Edward Elgar, 2010);
- B. J. Richardson, Y. le Bouthillier, H. McLeod-Kilmurray and S. Wood, *Climate Law and Developing Countries: Legal and Policy Challenges for the World Economy* (Cheltenham, UK: Edward Elgar, 2010).

Trade measures in international environmental agreements:

- J. Cameron and J. Robinson, 'The Use of Trade Provisions in International Environmental Agreements and Their Compatibility with GATT', 2 *Yearbook of International Environmental Law* 3 (1991);
- J. Cameron and J. Robinson, 'The Use of Trade Provisions in International Environmental Agreements: A Report for the OECD', 2 *Yearbook of International Environmental Law* 8 (1991);
- I. Cheyne, 'Environmental Treaties and the GATT', 1 *Review of European Community and International Environmental Law* 14 (1992);
- J. Dunoff, 'Reconciling International Trade with Preservation of the Global Commons: Can We Prosper and Protect?', 49 *Washington and Lee Law Review* 1407 (1992);
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- C. Henckels, 'GMOs in the WTO: A Critique of the Panel's Legal Reasoning in EC – Biotech', 7 *Melbourne Journal of International Law* 278 (2006);
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- R. E. Hudec, 'The New WTO Dispute Settlement Procedure: An Overview of the First Three Years', 9 *Minnesota Journal of Global Trade* 1 (1999);
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T. L. Meyer, 'Energy Subsidies and the World Trade Organization', 17 *ASIL Insights* 1 (2013), available at: http://digitalcommons.law.uga.edu/fac_artchop/908;

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Future Developments

CHAPTER OUTLINE

This final chapter considers the milestones in the development of international environmental law, as noted throughout the book, and highlights three main challenges going forward:

1. governance, namely challenges posed by the participation of more and different actors, in particular, non-state actors;
2. implementation and enforcement, driven by under-resourcing, particularly in developing countries, and the fragmented nature of the regulatory framework; and
3. centralisation, namely whether the regulatory approach should continue to focus on the multilateral or adopt a more decentralised, polycentric approach that could foster enhanced levels of agreement and participation by non-state actors.

INTRODUCTION

The Stockholm Conference is widely regarded as the moment of ‘birth’ of modern international environmental law,¹ so its approaching fiftieth anniversary offers a moment to reflect on what international environmental law has achieved and the challenges that lie ahead. Since the first edition of this book was published in 1994, international environmental law has become an important disciplinary area within the broader field of international law. Its focus is regulation of ‘the environment’, which encompasses both the natural world and human interactions with it, and is characterised by a complex system of interconnections.² The interdependence of environmental issues poses a constant challenge for international law: how to develop and apply a comprehensive and effective set of legal requirements that will prevent environmental damage by addressing the sources, without taking measures that will cause harm elsewhere.

Over the past several decades, significant steps have been made towards the development of a more comprehensive and effective legal framework to address environmental issues. In the field

¹ L. B. Sohn, ‘The Stockholm Declaration on the Human Environment’, 14(3) *Harvard International Law Journal* 423 (1973); M. Pallemarts, ‘International Environmental Law from Stockholm to Rio: Back to the Future?’, 1(3) *Review of European Community and International Environmental Law* 254 (1992); J. Brunnée, ‘The Stockholm Declaration and the Structure and Processes of International Environmental Law’, in A. Chircop and T. McDorman (eds.), *The Future of Ocean Regime Building: Essays in Tribute to Douglas M. Johnston* (Leiden: Brill/Nijhoff, 2008), 41.

² Chapter 1, p. 14.

of international lawmaking and regulation by states – still the principal actors in international environmental law – notable achievements include: the development and progressive tightening of controls on the production and consumption of ozone-depleting substances under the 1987 Montreal Protocol, credited with reversing the trend towards depletion of the ozone layer;³ the establishment by UNEP of a network of regional seas conventions and protocols covering the world's oceans;⁴ the elaboration of a regime for the conservation and sustainable use of biodiversity incorporating two major protocols (on biosafety and access to genetic resources) as well as a supplementary liability protocol to the biosafety regime;⁵ the introduction of landmark rules in the 1998 Aarhus Convention to promote greater public involvement in decision-making, through information, participation and access to justice in environmental matters;⁶ and the growing willingness of international courts to address environmental issues, even if they often reflect a cautious, timid approach.

International organisations have also made a substantial contribution to international environmental regulation. In the absence of a 'global environment organisation' of similar standing to international economic bodies such as the WTO,⁷ multilateral environmental agreements and their supporting institutions have emerged as major sites for the development of innovative environmental rules and practices. Moratoria introduced by international treaty organisations on the commercial harvesting of whale species⁸ and the dumping of radioactive wastes at sea⁹ retain their standing as seminal moments for international environmental law, catalysing later regulatory efforts. International organisations outside of the environmental sphere have also played a major role in developing international environmental legal principles and techniques. UN organisations lacking a direct environmental mandate, such as the IMO, have been at the forefront of legal developments, putting in place liability and compensation regimes to address the effects on humans and the environment of spills of oil and other hazardous and noxious substances.¹⁰ The International Law Commission has made a significant contribution to the area, most particularly through its general Articles on State Responsibility,¹¹ but also through more specific work on topics such as the Prevention of Transboundary Harm from Hazardous Activities.¹² Economic organisations such as the World Bank have also played an important role: the Bank's environmental impact assessment requirements,¹³ procedures for inspection and review,¹⁴ and policies on access to information,¹⁵ have often led the way for other international organisations, including multilateral environmental agreements.

Courts and tribunals have proved willing, especially over the last two decades, to engage more fully with environmental issues. Cases such as the ICJ's decisions in *Pulp Mills*¹⁶ and *Whaling*,¹⁷ the jurisprudence of ITLOS including its Advisory Opinions on *Responsibilities and Obligations in the Area*,¹⁸ and the *Sub-Regional Fisheries Commission*,¹⁹ the WTO Appellate Body's ruling in *Shrimp/Turtle*, together with arbitral findings in the *South China Sea* dispute²⁰ and

³ Chapter 7, pp. 280–9. ⁴ Chapter 11, pp. 465–72. ⁵ Chapter 10, p. 402 and Chapter 16, pp. 797–9.

⁶ Chapter 15, pp. 710–12. See also the 2003 Protocol on Pollutant Releases and Transfer Registers, Chapter 15, pp. 712–15.

⁷ In respect of proposals for a 'GEO', see D. C. Esty, 'Revitalizing Global Environmental Governance for Climate Change', 15 *Global Governance* 427 (2009).

⁸ Chapter 11, pp. 534–5. ⁹ Chapter 4, p. 116; and Chapter 12, p. 615. ¹⁰ Chapter 16, pp. 779ff.

¹¹ Chapter 16, p. 769. ¹² Chapter 6, pp. 211–12. ¹³ Chapter 14, pp. 675–6. ¹⁴ Chapter 5, pp. 176–7.

¹⁵ Chapter 15, p. 708. ¹⁶ Chapter 9, pp. 351–5. ¹⁷ Chapter 11, 536–8. ¹⁸ Chapter 11, 498–9.

¹⁹ Chapter 11, pp. 546–8. ²⁰ Chapter 11, pp. 531–2.

long-standing rulings in seminal cases such as *Trail Smelter* and *Pacific Fur Seal*, have played an important role in establishing and elaborating some of the fundamental principles that underlie the discipline of international environmental law. Increasingly, as the *Whaling* and *South China Sea* cases showed, international courts and tribunals are willing to engage with more complex evidentiary issues and give principles and rules a stronger legal bite.

International environmental law has also seen significant evolution in its regulatory techniques for the implementation of obligations. Environmental impact assessment is now established as a requirement of general international law,²¹ although the precise details of what this obligation imposes is open to debate.²² In the last two decades, new instruments have been developed in the area of access to environmental information, such as the 2003 Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention.²³ There has also been a significant strengthening of arrangements for achieving compliance with international environmental obligations, with a focus on the elaboration of non-compliance mechanisms,²⁴ and civil liability regimes of strict liability.²⁵

Finally, the potential promise of sustainable development has been fulfilled in some respects as environmental issues are increasingly treated as an important aspect of international economic and development activity. The UN Sustainable Development Goals, which set the global sustainable development agenda for 2015 to 2030, seek to cement this trend. For better or for worse, a high degree of integration of environmental concerns with international economic law has been achieved in the past two decades as evidenced by legal developments within the field of international trade law,²⁶ the provision of technology,²⁷ and the law pertaining to foreign direct investment.²⁸ There is also an increasing degree of interconnection between environmental law and other fields of international law, particularly international human rights and humanitarian law,²⁹ competition law,³⁰ intellectual property law and laws relating to the protection of the traditional knowledge of indigenous peoples.³¹

Yet these significant developments cannot hide the fact that, in many cases, environmental protection remains on the margins of international policy, and that the norms of international environmental law have not yet radically or significantly changed human behaviour in ways that many would want. The challenges are very real, as finite resources are subject to ever increasing demands. Some challenges lie in developing rules to cover new forms of environmental risk that are not regulated – either well or at all – by existing international law; examples include the health and environmental effects of nanotechnologies,³² geoengineering options for climate change mitigation,³³ or putting in place a coherent regulatory framework for natural disaster management.³⁴ The area of climate change regulation – where ‘historic’ progress was made with the conclusion of the Paris Agreement in December 2015 – has emerged as a litmus test for the capacity of international law to respond effectively to complex environmental and

²¹ *Pulp Mills*, para. 204. ²² See Chapter 14, pp. 678ff. ²³ Chapter 15, pp. 712–15. ²⁴ Chapter 5, pp. 172–5.

²⁵ Chapter 16, pp. 771ff. ²⁶ Chapter 18, pp. 843–99. ²⁷ Chapter 15, pp. 720–7 and Chapter 18, pp. 916–22.

²⁸ Chapter 18, pp. 900–16. ²⁹ See generally Chapter 17. ³⁰ Chapter 18, pp. 894–9. ³¹ *Ibid.*, pp. 916–24.

³² D. Leary and B. Pisupati, ‘Emerging Technologies: Nanotechnology’, in D. Leary and B. Pisupati (eds.), *The Future of International Environmental Law* (Tokyo/New York: United Nations University Press, 2010), 227.

³³ C. Redgwell, ‘Geoengineering the Climate: Technological Solutions to Mitigation Failure or Continuing Carbon Addiction?’, 5(2) *Carbon and Climate Law Review* 178 (2011).

³⁴ International Federation of Red Cross and Red Crescent Societies, *Law and Legal Issues in International Disaster Response: A Desk Study* (2007).

social problems. It is particularly disturbing that, despite considerable strengthening of scientific knowledge regarding climate change since the initial 'precautionary' regulations were introduced in 1992,³⁵ and a global consensus on the need to limit warming to (well below) 2° C above pre-industrial levels,³⁶ states' pledged measures to reduce emissions of greenhouse gases fall well below what is needed to prevent dangerous levels of global warming. The Paris Agreement is a 'high stakes experiment' with an alternative, bottom-up process for development of measures to address climate change, but relies heavily on good faith, ambitious action by parties over time to meet collective goals regarding climate change mitigation and adaptation.³⁷

Apart from a few key treaty developments, such as the 2015 Paris Agreement, the 2013 Minamata Mercury Agreement, and negotiations to adopt an UNCLOS implementing agreement on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction, it appears that the lawmaking instinct has slowed very considerably. With the era of lawmaking coming to an end, the next stage seems to be more concerned with implementing and strengthening what is already on the statute books. International environmental law thus appears to be in a phase of consolidation and extension of existing regimes rather than rapid legal development, as characterised the years following the Stockholm Conference. In this context, the following sections of this chapter consider some of the other, broader challenges international environmental law faces as we move ahead into the third decade of the twenty-first century.³⁸ These challenges can be grouped under distinct but interrelated headings: governance; implementation and enforcement of obligations; and the future for environmental regulatory development. The latter considers the tension between multilaterally based, comprehensive approaches to international environmental lawmaking and regulation versus approaches that are regionally based and focused on particular sectoral issues or problems.

GOVERNANCE CHALLENGES

We have used the notion of 'governance' to describe the actors that participate in the legislative, administrative and adjudicative processes of international environmental law, as well as the structures and rules that enable (or, in some cases, hinder) their participation. Some see governance as a – if not the – critical issue, facing the future of international environmental law.³⁹ These authors suggest that environmental governance in the future will need to do more to accommodate the needs and aspirations of peoples from both developed and developing countries and will have to be based on participation by a vast range of actors and stakeholders extending beyond the state that has been the traditional subject of international environmental law. They point to interlinkage with other areas of international law, particularly international human rights, as a way of furthering these goals.⁴⁰

³⁵ IPCC, WG I, 'Climate Change 2007: The Physical Scientific Basis', in *Fourth Assessment Report: Climate Change 2007* (2007).

³⁶ Decision 1/CP.16, Report of the Conference of the Parties on Its Sixteenth Session, Cancún, 29 November–10 December 2010, FCCC/CP/2010/7/Add.1 (Convention Agreement); Decision 1/CMP.6, Conference of the Parties serving as the Meeting of the Parties on its Sixth Session, 29 November–10 December 2010, FCCC/KP/CMP/2010/12/Add.1 (Kyoto Agreement).

³⁷ M. Doelle, 'The Paris Agreement: Historic Breakthrough or High Stakes Experiment?', 6(1–2) *Climate Law* 10 (2016).

³⁸ On the history of the development of international environmental law, see Chapter 2. See also the discussion of challenges for international environmental law in Chapter 1, pp. 16–17.

³⁹ See Leary and Pisupati, 292. ⁴⁰ *Ibid.*, 293–4.

There are clear signs in international environmental law of a greater openness to participation by non-state actors, particularly NGOs and business entities. In respect of NGOs, developments of note include: the establishment of a non-compliance mechanism in 2002 under the Aarhus Convention to which NGOs may nominate members,⁴¹ and bring communications relating to non-compliance;⁴² and the January 2001 ruling of the *Methanex* arbitral tribunal that it had the power pursuant to relevant UNCITRAL rules to accept *amicus* written submissions from various NGOs.⁴³ Business involvement in international environmental legal processes is often less obvious than that of NGOs, but increasingly potent in shaping outcomes, particularly in determining the practical implementation of international environmental rules. Examples include initiatives under the UN Global Compact to enhance the contribution of business to sustainable development;⁴⁴ the involvement of the insurance industry in negotiations for the Protocol to the Industrial Accidents and Transboundary Watercourses Conventions to agree on 'practical' measures relating to limits on liability;⁴⁵ and the compact between six major biotechnology companies to develop 'A Contractual Mechanism for Response in the Event of Damage to Biological Diversity Caused by the Release of a Living Modified Organism', which elaborated specific legal standards regarding issues of causation and limitations on liability.⁴⁶ The negotiations for the Paris Agreement also saw an unprecedented level of involvement by the business community and NGOs, as well as by lower levels of government, including local authorities and cities. The Conference of the Parties' decision adopting the Agreement makes specific reference to 'the efforts of all non-Party stakeholders to address and respond to climate change, including those of civil society, the private sector, financial institutions, cities and other subnational authorities' and invites them 'to scale up their efforts and support actions to reduce emissions and/or to build resilience and decrease vulnerability to the adverse effects of climate change', including through a new Non-State Actor Zone for Climate Action platform established at the Paris negotiations.⁴⁷

Another category of non-state actors playing an increasing, albeit not always effective, role in international environmental law is the scientific community. Several recent treaties, such as the 2001 POPs Convention and the 2009 Ships Recycling Convention, demonstrate a trend towards greater reliance on expert committees and technical processes of assessment in identifying and evaluating environmental risks.⁴⁸ Multilateral processes of scientific assessment, modelled on the work of the IPCC, are also becoming a feature of other areas of international environmental activity such as biodiversity conservation and evaluation of the effects of ecosystem change.⁴⁹ At the same time, the treatment of expert evidence in other areas of international environmental

⁴¹ Decision I/7, Review of Compliance, Annex I.4 (2002). Of the nine current members of the committee, three are drawn from NGOs and public interest legal organisations. The nomination process for the compliance committee under the 2003 Protocol on Pollutant Release and Transfer Registers is narrower, providing for nomination by states, 'taking due account of any proposal for candidates made by . . . non-governmental organizations qualified or having an interest in the fields to which the Protocol relates' (Decision I/2, Annex, I.4 (2010)).

⁴² Of the fifty-one communications received by the Committee as of June 2010, fifty were communications originated from members of the public (www.unece.org/press/pr2010/10env_p19e.htm).

⁴³ Order, 15 January 2001 (www.state.gov/documents/organization/6039.pdf). ⁴⁴ Chapter 3, pp. 93–4.

⁴⁵ Chapter 16, p. 801. ⁴⁶ Chapter 16, p. 799. ⁴⁷ Decision 1/CP.21, paras. 118, 134–5.

⁴⁸ 2001 POPs Convention, Arts. 8 and 19(6)(a); 2009 Ships Recycling Convention, Art. 18 and Annex, Regulations 6 and 7.

⁴⁹ See e.g. the Millennium Ecosystem Assessment (2005) initiated by former UN Secretary General, Kofi Annan.

law, particularly in dispute settlement, is becoming more sophisticated, as seen in the developments from the *Pulp Mills* and *Whaling* judgments of the ICJ.⁵⁰

The role of individuals is often obscured in international environmental law even though it is clear that international regulation in this field is having an increasing impact on the daily lives of individuals and communities.⁵¹ Some communities are gaining an increasing voice in international environmental legal processes, for instance indigenous and local communities as holders of traditional knowledge pursuant to the 2010 Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing,⁵² and individuals able to avail themselves of global and regional human rights complaints mechanisms to press environmental concerns.⁵³ However, in other areas the concerns of the individual are drowned out as a result of the tendency of international environmental law to focus on state concerns. This is particularly evident in the area of climate-change-related migration, where no adequate international legal regime currently exists to deal with persons who may be displaced from their homeland by climate change.

In terms of structures for enabling participation by diverse actors, an area of concern remains that of ensuring the participation of developing countries – particularly least developed countries and small island states – in the negotiation and implementation of international environmental obligations. Achieving better results in this respect is closely tied to the fulfilment of commitments by developed countries around financial resources and technology transfer, and associated loosening of intellectual property restrictions.⁵⁴ Climate change is emerging as a particularly critical test for the capacity of international environmental law and international organisations to develop effective modes of capacity-building. The endorsement of mechanisms for Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+) under the international climate change regime may emerge as a potentially positive example in this regard.⁵⁵

Structures to enable meaningful participation by non-state actors, particularly NGOs and individuals, are still at a rudimentary stage of development. The United Nations Economic Commission for Europe (UNECE) has led the way with the 1998 Aarhus Convention, but there is little indication that these initiatives will be taken up more widely. Major obstacles to effective participation by non-state actors in international environmental law remain, such as restrictions on the release of commercial-in-confidence information, the absence of avenues for participation in decision-making, and the manifestly inadequate implementation of treaty obligations at the domestic level in many states.

⁵⁰ *Pulp Mills* case, paras. 165–8, at para. 167; Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, paras. 2–25 (especially para. 14); also P. Sands, 'Water and International Law: Science and Evidence in International Litigation', 22 *Environmental Law and Management* 15 (2010); cf. L. C. Lima, 'The Evidential Weight of Experts before the ICJ: Reflections on the Whaling in the Antarctic Case', 6(3) *International Journal of Dispute Settlement* 621 (2015). The use of expert evidence and the applicable standard of review to be applied by panels has also been a major topic of discussion in the case law under the WTO SPS Agreement (see Chapter 18, pp. 873–81).

⁵¹ M. Zürn, 'Global Governance and Legitimacy Problems', 39(2) *Government and Opposition* 260 (2004).

⁵² Chapter 18, pp. 922–4. ⁵³ Chapter 17, pp. 819–27. ⁵⁴ See Chapter 15, pp. 720–1.

⁵⁵ See M. L. Brown, 'Limiting Corrupt Incentives in a Global REDD Regime', 37(1) *Ecology Law Quarterly* 237 (2010); K. Levin, C. McDermott and B. Cashore, 'The Climate Regime as Global Forest Governance: Can Reduced Emissions from Deforestation and Forest Degradation (REDD) Initiatives Pass a "Dual Effectiveness" Test?', 10(3) *International Forestry Review* 538 (2008); S. Jodoin and S. Mason-Casé, 'What Difference Does CBDR Make? A Socio-Legal Analysis of the Role of Differentiation in the Transnational Legal Process for REDD+', 5(2) *Transnational Environmental L.* 285 (2016).

IMPLEMENTATION AND ENFORCEMENT CHALLENGES

Ensuring adequate and effective implementation and enforcement of international environmental obligations is a long-standing and continuing challenge for international environmental law. Limitations imposed by the principle of territorial sovereignty continue to pose significant hurdles for global environmental protection efforts, particularly in respect of shared natural resources or global commons issues. Some indications of a move to embrace rights of *actio popularis* – in the ILC's Articles on State Responsibility and more recently in the ITLOS Advisory Opinion on *Responsibilities and Obligations in the Area* – are encouraging but are hardly a panacea for reconciling the established international legal order and the 'inherent and fundamental interdependence of the world environment'.⁵⁶ The inadequacy of domestic implementation efforts is also a critical element, particularly as international environmental law moves to put in place ever more detailed regulatory requirements. In the past two decades, there has been a greater focus on issues of monitoring, reporting and verification (MRV), as well as the associated development of non-compliance procedures in a number of treaty regimes.⁵⁷ To achieve real advances in domestic implementation and compliance, however, it will be necessary for these procedures to work closely with treaty bodies and other international organisations concerned with facilitating technology transfer and ensuring the provision of financial resources to assist developing countries with compliance.

At the international level, a related aspect of implementation (and, indeed, international environmental governance) is the need for coordination between different international environmental treaties with connected or overlapping mandates.⁵⁸ Increased coordination is often called for as a means of easing the problem of 'treaty congestion' in international environmental law generated by a multiplicity of 'separate negotiating fora, separate secretariats and funding mechanisms, overlapping provisions and inconsistencies between agreements, and severe demands on local capacity to participate in negotiations, meetings of parties and associated activities'.⁵⁹ The tendency for international environmental law to treat environmental matters on a sectoral basis (e.g. separate laws for fisheries, marine pollution, climate change regulation and so on) rather than in an integrated fashion has aggravated this problem. The result is a fragmented international legal response to a particular environmental issue, sometimes with contradictory, or at least differing, positions adopted by or within different treaty bodies. The absence of a single, overarching organisation – à la the WTO – only serves to exacerbate the problem, allowing those who seek to minimise international environmental developments to divide and rule within the fragmented structure.

⁵⁶ P. Allott, *Eunomia: A New Order for a New World* (Oxford: Oxford University Press, 1990), para. 17.52.

⁵⁷ Chapter 5, pp. 172–5.

⁵⁸ M. A. Young, *Trading Fish, Saving Fish: The Interaction Between Regimes in International Law* (Cambridge: Cambridge University Press, 2011); M. A. Young, 'Protecting Endangered Marine Species: Collaboration Between the Food and Agriculture Organization and the CITES Regime', 11(2) *Melbourne Journal of International Law* 441 (2010); W. Bradnee Chambers, *Interlinkages and the Effectiveness of Multilateral Environmental Agreements* (Tokyo/New York: United Nations University Press, 2008); G. Kristin Rosendal, 'Impacts of Overlapping International Regimes: The Case of Biodiversity', 7 *Global Governance* 95 (2001).

⁵⁹ E. Brown Weiss, 'New Directions in International Environmental Law', Paper presented on 15 March 1995 to the United Nations Congress on Public International Law, New York, 13–15 March 1995, reprinted in *United Nations Congress on Public International Law, New York, 13–15 March 1995: Proceedings of the Congress*, UN Sales No. E.95.V.9 (1995).

The question of whether international law should permit ocean iron fertilisation is an acute example of the difficulties that can arise. While ocean iron fertilisation is being investigated in some quarters as a potential measure for climate change mitigation,⁶⁰ parties to the 1996 London Protocol in 2008 adopted a resolution stating that 'ocean fertilization activities other than legitimate scientific research should not be allowed'.⁶¹ The approach taken by the Biodiversity Convention was more robust. In 2008, the Conference of the Parties requested parties

in accordance with the precautionary approach, to ensure that ocean fertilization activities do not take place until there is an adequate scientific basis on which to justify such activities, including assessing associated risks, and a global, transparent and effective control and regulatory mechanism is in place for these activities; with the exception of small scale scientific research studies within coastal waters.⁶²

More broadly, the relationship between the international climate change regime under the Climate Change Convention and Paris Agreement, and UNCLOS, the principal treaty governing the oceans, remains unclear,⁶³ despite the intimate connection between oceans and the world's climate, and the severe impacts on ocean ecosystems predicted as a consequence of climate change.⁶⁴

In other areas of international environmental law there are positive signs of increased coordination between different treaty bodies covering similar subject matter. A good example in this regard is the joint meeting of the Conferences of the Parties to the 1998 Chemicals, 2001 POPs and 1989 Basel Conventions held since Bali, Indonesia, in 2010.⁶⁵ This might provide a useful precedent for developing closer cooperation between other treaty organisations addressing different aspects of the same or related environmental problems. Less propitious is the continued wrangling between countries participating in negotiations under the WTO Doha Declaration over establishing 'procedures for regular information exchange between [multilateral environmental agreement] secretariats and the relevant WTO committees, and the granting of observer status'.⁶⁶ Political obstacles have prevented agreement on rules for allowing the grant of reciprocal observer rights as between WTO institutions and secretariats of multilateral

⁶⁰ M. MacCracken, 'Beyond Mitigation: Potential Options for Counter-Balancing the Climatic and Environmental Consequences of the Rising Concentrations of Greenhouse Gases', World Bank Policy Research Working Paper Series, No. 4938, available at <http://ideas.repec.org/p/wbk/wbrwps/4938.html>

⁶¹ LC-LP.1 (2008), Third Meeting of the Contracting States to the London Protocol, 27–31 October 2008. See also IMO, Interim Report on Ocean Fertilization Science Overviews, LC33/4, 4 September 2009.

⁶² Decision XI/16, C.4 (2008).

⁶³ See generally M. Doelle, 'Climate Change and the Use of the Dispute Settlement Regime of the Law of the Sea Convention', 37(3/4) *Ocean Development and International Law* 319 (2006). The need for greater interaction between the international climate change regime and UNCLOS was recognised by the World Ocean Conference, held in Manado, Indonesia, 11–14 May 2009.

⁶⁴ IPCC, *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), ch. 5, 'Observations: Oceanic Climate Change and Sea Level'; P. J. Mumby, R. Iglesias-Prieto, A. J. Hooten et al., 'Revisiting Climate Thresholds and Ecosystem Collapse', 9(2) *Frontiers in Ecology and the Environment* 94 (2011).

⁶⁵ Simultaneous extraordinary meetings of the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions were held in the Bali International Convention Centre in Nusa Dua, Bali, Indonesia, 22–24 February 2010, in coordination with the eleventh special session of the Governing Council/Global Ministerial Environment Forum (GC/GMEF) of the United Nations Environment Programme which was held at the same venue, 24–26 February 2010.

⁶⁶ Doha Declaration, para. 31(ii).

environmental agreements (MEAs), such as the Climate Change and Biodiversity Conventions.⁶⁷ Instead, ad hoc and informal arrangements exist to allow selected MEA secretariats to participate in WTO committee meetings, such as those of the Committee on Trade and the Environment.

New tools for the implementation of international environmental obligations may also assist in easing the burden of compliance, and thereby contributing to better environmental outcomes. This has been the promise of economic instruments, included most prominently in the 1997 Kyoto Protocol's flexibility mechanisms, with echoes in the Paris Agreement's Article 6 mechanism. However, the voluminous texts of the Marrakesh Accords negotiated to elaborate 'modalities' for the operation of the flexibility mechanisms illustrate the gap between economic theory and the practical implementation of market measures in international legal arrangements.⁶⁸ The sheer complexity of the rules proved a burden to their application and enforcement. Equally challenging, but potentially more rewarding, are nascent efforts to develop mechanisms for integrated pollution control or integrated environmental management in international environmental law.⁶⁹ Instruments such as the 1999 Gothenburg Protocol to the LRTAP Convention (in force 2005) allow several air pollutants and their environmental impacts to be addressed in an integrated fashion that maps more closely to the underlying interdependence of affected ecosystems.

FUTURE REGULATORY DEVELOPMENT

One of the most difficult issues confronting international environmental law concerns the adequacy of its lawmaking process, both in substantive and procedural terms. Two principles have generally guided the legislative process to date. The first is a commitment to multilateral cooperation to deal with shared environmental problems.⁷⁰ The second is the principle of sovereign equality, which posits all states as having an equal right to participate in international law, and predisposes legislative processes towards a consensus decision-making approach. The difficulties that this poses are highlighted by the point made in Chapter 1: whereas just two states negotiated the nineteenth-century fishery conservation conventions, more than 150 states negotiated the 1992 Climate Change Convention and the 2000 Biosafety Protocol, and more recent negotiations, such as those for the Minamata Mercury Convention, have involved more than 190 states. As the number of states participating in international environmental law has increased, the task of securing broad agreement on the basis of consensus decision-making has become progressively harder, particularly where environmental protection objectives come into conflict with clear economic interests of states. In recent years, it has proved increasingly difficult to realise ambitious regulatory goals in the environmental field. The 2010 Nagoya-Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol is a pertinent example: although it is commendable that the 161 states parties to the Biosafety Protocol were able to agree rules on the complex topic of liability for environmental damage caused by living modified organisms (LMOs), the liability regime itself is essentially 'a text allowing Parties to address LMO damage through existing civil liability systems or through newly developed civil liability

⁶⁷ A broader geopolitical conflict concerning the Arab League's application to qualify for observer status at the WTO has seen proposals for the grant of observer status to MEA secretariats consistently blocked (R. Eckersley, 'The Big Chill: The WTO and Multilateral Environmental Agreements', 4(2) *Global Environmental Politics* 24 at 34 (2004)).

⁶⁸ Chapter 8, pp. 307-15. ⁶⁹ Chapter 4, pp. 139-41. ⁷⁰ e.g. Rio Declaration, Principle 12.

mechanisms',⁷¹ and as such leaves critical questions about the standard of liability, exemptions from liability, limits on the extent of liability and the need for operators to maintain some form of financial security to be resolved in domestic law. In short, there is an evident need for lawmaking to be achieved through the development of new systems of qualified majority decision-making.

It does not seem that enforcement actions through international courts and tribunals will provide a remedy to weaknesses of the legislative process. Although courts and tribunals have shown greater willingness to engage with environmental issues in the past few decades, their record when it comes to giving real meaning and effectiveness to environmental rules and principles has been less than impressive. There are now a number of environmental and sustainable development principles – with the notable exception of the precautionary principle – that international courts and tribunals have recognised as customary or general international principles.⁷² However, rarely is that recognition translated into a robust finding that challenges the status quo of allowing economic development despite its potential for harmful impacts on health or the environment. At some point these courts and tribunals will have to get off the fence, and impose interpretations and decisions that give real and effective primacy to environmental norms.

The climate change negotiations opted for a different approach in seeking universal participation in the Paris Agreement, one that essentially leaves the design and ambition of climate action up to participating states. While this approach was successful in securing broad agreement on comprehensive rules to address climate change, it leaves highly uncertain the question of whether bottom-up state action will be sufficient to meet the Paris Agreement's objectives. The alternative, as many commentators in the climate change field have noted, is a future course of climate and potentially broader environmental regulation that is targeted to fostering regulatory development at the regional (or even national) level on particular aspects of the wider problem.⁷³ Applied more widely, this approach might see the role of *international* environmental regulation decrease in favour of a 'kaleidoscopic' model in which lawmaking activities take place at multiple levels.⁷⁴ However, before embracing such an approach it is important to consider what might be lost in departure from a multilateral approach: the potential that the interests of smaller, less economically powerful states and their peoples will not receive sufficient consideration,⁷⁵ adherence to principles of equity, and the capacity to take a holistic view of an

⁷¹ A. Telesetsky, 'The 2010 Nagoya-Kuala Lumpur Supplementary Protocol: A New Treaty Assigning Transboundary Liability and Redress for Biodiversity Damage Caused by Genetically Modified Organisms', 14(41) *ASIL Insights* 10 (2011).

⁷² See Chapter 6, pp. 229–40.

⁷³ G. Prins and S. Rayner, 'Time to Ditch Kyoto', 449 *Nature* 973 (2007); G. Prins, I. Galiana, C. Green et al., 'The Hartwell Paper: A New Direction for Climate Policy after the Crash of 2009', Institute for Science, Innovation and Society, University of Oxford and LSE Mackinder Programme, May 2010; C. Okereke, H. Bulkeley and H. Schroeder, 'Conceptualising Climate Governance Beyond the International Regime', 9 *Global Environmental Politics* 58–78 (2009); E. Ostrom, 'A Polycentric Approach for Coping with Climate Change' (a Background Paper to the 2010 World Development Report), Policy Research Working Paper 5095, World Bank, Washington (2009).

⁷⁴ E. Brown Weiss, 'International Law in a Kaleidoscopic World', 1 *Asian Journal of International Law* 21 (2011).

⁷⁵ One of the criticisms levelled against the failed Copenhagen climate change conference from a process viewpoint was the 'Friends of the Chair' negotiating process that was said to exclude many states (L. Rajamani, 'The Making and Unmaking of the Copenhagen Accord', 59 *International and Comparative Law Quarterly* 825 (2010); D. Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', 104(2) *American Journal of International Law* 230 at 238 (2010)).

environmental issue which is often a prerequisite for integrated forms of environmental management.

Questions over the best approach to regulatory development in the environmental field are difficult to resolve, especially in the abstract, as the answer will often depend on the nature of the particular environmental issue being addressed. Nevertheless, it is noteworthy that, in the last decade, many of the more progressive developments in international environmental law have taken place in regional fora, such as the UNECE or regional seas conventions. If international environmental law in the future does move to embrace a 'kaleidoscopic' mode of environmental regulatory development, this is likely to offer more avenues for participation by actors beyond states, including NGOs, corporations and intergovernmental organisations. At the same time, it would present new challenges in ensuring that different areas of international law are complementary rather than conflictual and achieve overall goals of environmental protection.

CONCLUSIONS

In summary, it is plain that much has been achieved over the past half century, and the landscape of international environmental law is scarcely recognisable as compared with that which pertained in the post-Second World War period. It is equally plain, however, that the new norms and principles have not yet significantly changed human behaviour: with limited exceptions, the threat to the global environment and to shared natural resources is greater today than before the advent of the modern system that was catalysed by the Stockholm Conference in 1972. The next generation of lawyers and policymakers in international environmental law has even more to do than those who contributed to the developments that were described in the first edition of the book. This is still not a time for complacency, or celebration of achievement. Quite the contrary.

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